

# MOTOR AGE

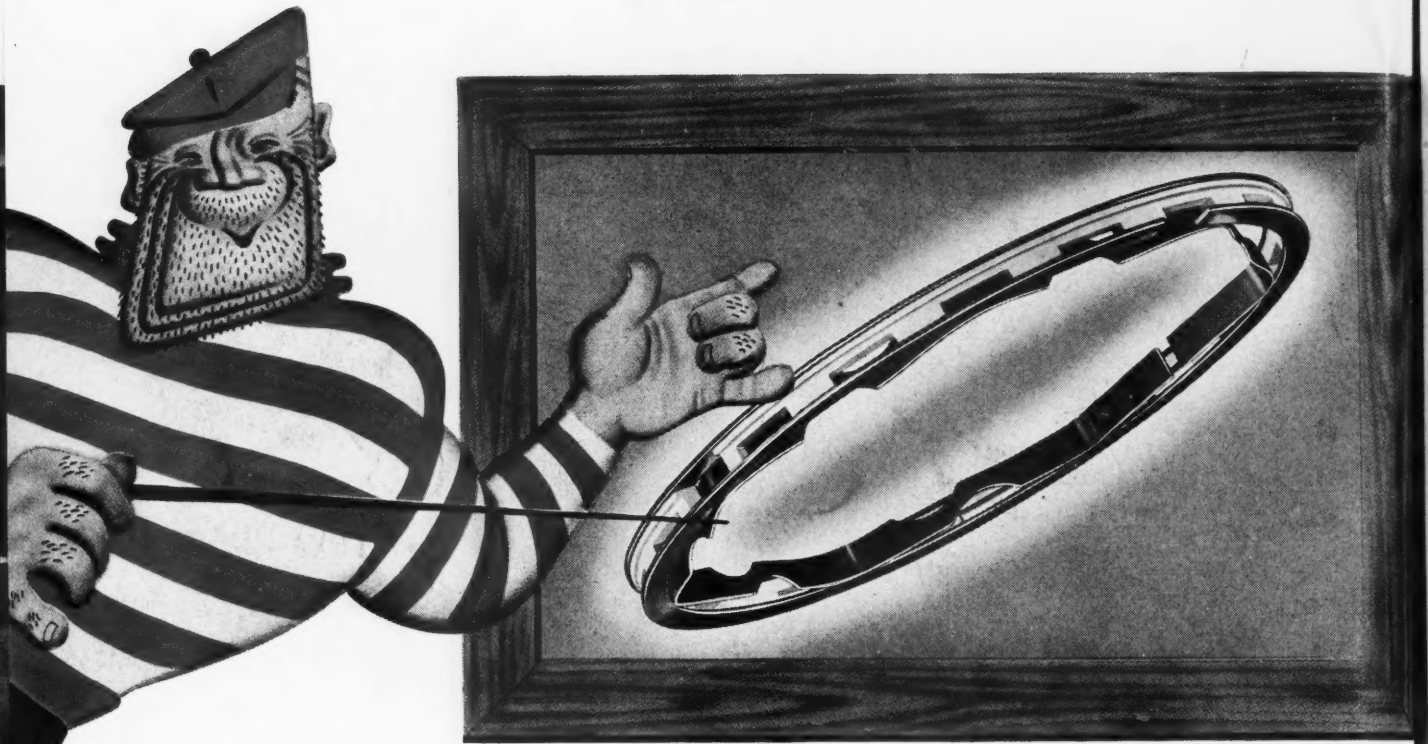
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JUL 1 1947  
✓ DETROIT



JUNE 1947  
CHILTON PUBLICATION

Reilly

# What do you mean "DRY" ring ?



## Steel-Vents Give Extra Lubrication Under Full Control

● Fact of the matter is that the Hastings Steel-Vent piston ring has the greatest oil-carrying capacity of any ring you've ever seen. It carries more oil to the cylinder walls . . . gives more lubrication—but keeps the oil under control.

This extra lubrication, under full control, means Steel-Vent is the right ring for any cylinder condition—rebored, resleeved or tapered. Ample lubrication is also one of the

big reasons for the extremely long life of Hastings Steel-Vent rings.

### "Successful Reboring"

This is not a fancy advertising brochure nor a complicated engineering treatise. It's a plain booklet packed with common sense suggestions for successful reboring. Its only purpose is to help you. Why not write for a copy today?



HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN

Hastings Ltd., Toronto

TOUGH BUT OH SO GENTLE



# HASTINGS

STEEL-VENT PISTON RINGS

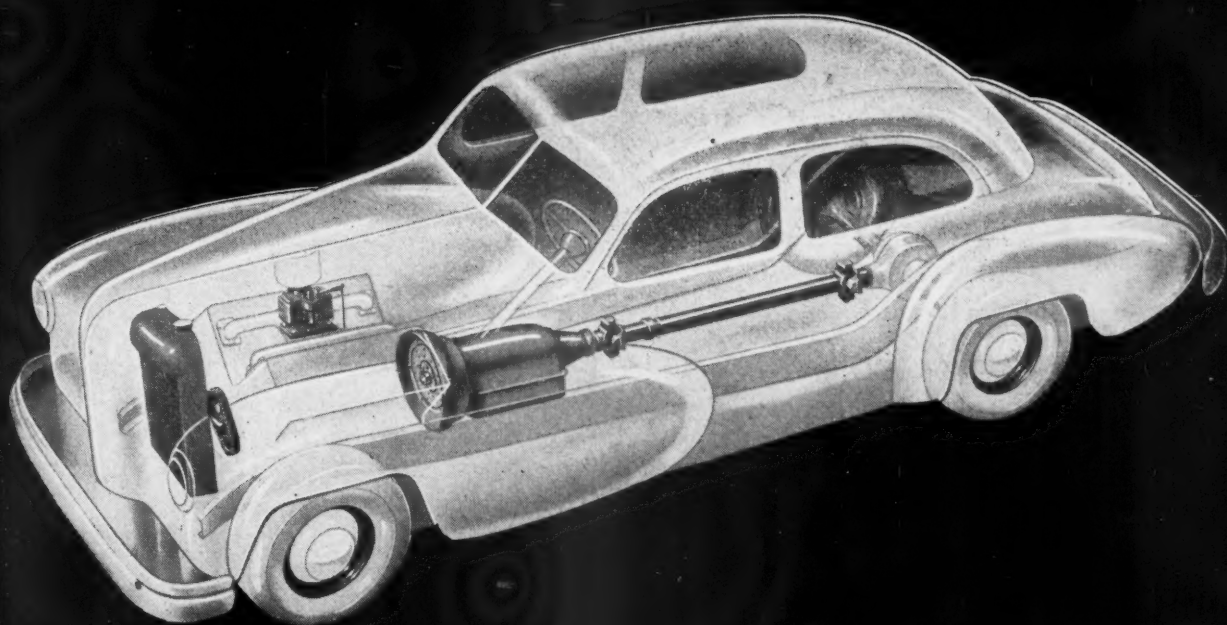
**TOUGH** on Oil-pumping  
**GENTLE** on Cylinder Walls



# 19 of the 20

## makes of motor cars embody essential

## parts made by BORG-WARNER!



**TRANSMISSIONS  
TIMING CHAINS  
OVERDRIVES  
SYNCHRONIZERS**

**CLUTCHES  
UNIVERSAL JOINTS  
DRIVE SHAFTS  
CARBURETORS  
TAPERED WHEEL DISCS**



*Executive Offices, Chicago. These units form Borg-Warner:* BORG & BECK • BORG-WARNER INTERNATIONAL  
BORG WARNER SERVICE PARTS • CALUMET STEEL • DETROIT GEAR • DETROIT VAPOR STOVE • INGERSOLL STEEL  
LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARBON • MARVEL-SCHLEBLER CARBURETOR • MECHANICS  
UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • NORGE-HEAT • NORGE MACHINE PRODUCTS  
PESCO PRODUCTS • ROCKFORD CLUTCH • SPRING DIVISION • SUPERIOR SHEET STEEL DIVISION • WARNER AUTOMOTIVE  
PARTS • WARNER GEAR • WARNER GEAR CO., LTD. • WISCONSIN TRANSMISSION

# Why many thousands of trips start at **TEXACO DEALERS**



**T**HE famous Texaco sign means "stop here" to many motorists in all 48 states. At the start of a trip it means up-to-the-minute route information from Texaco Touring Service . . . plus pre-trip check-ups, lubrication, gasoline and other fine Texaco products and services.

And all along the way motorists know that Texaco Dealers are headquarters for their automotive needs and their personal comforts with clean, *Registered* Rest Rooms. These car owners want the Texaco products and services that are regularly advertised in the magazines and farm journals, on billboards, and over the air on the popular Texaco Star Theater program.

No wonder motorists start their trips at Texaco Dealers . . . and stop when they see the Texaco sign. No wonder *Texaco Dealers are such busy dealers!*

THE TEXAS COMPANY

*A Great Line-up  
for*  
**TEXACO DEALERS**

*Sky Chief* and **FIRE-CHIEF** GASOLINES  
HAVOLINE and TEXACO MOTOR OILS • MARFAK  
CHASSIS LUBRICATION • REGISTERED REST ROOMS

**TUNE IN . . .** Texaco Star Theater presents the Tony Martin show every Sunday night. See newspaper for time and station.



*Before  
and  
After -*



## **MECHANICAL TUNE-UP**

### **BEFORE YOU TUNE-UP!**

Add one quart of Permatex Toon-Oyl to the crankcase oil...and let the car idle. Sludge and carbon-gum binders will dissolve quickly. Valves, piston rings, oil lines and oil screens will operate freely. Then you'll have a clean engine...ready for all your mechanical adjustments.

### **AFTER YOU TUNE-UP!**

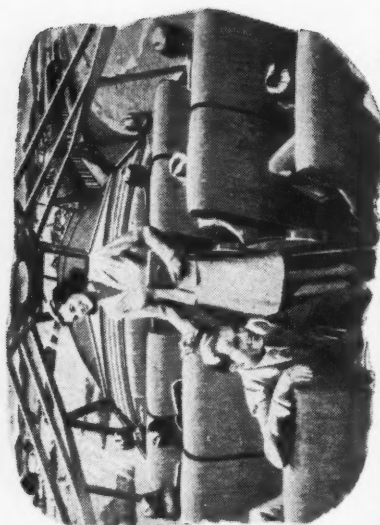
The best procedure is to drain out the old crankcase oil (with its dissolved sludge and gum) and replace with fresh oil containing one quart of Permatex Toon-Oyl. Then the car owner will get easier starting, snappier pick-up, more power and smoother driving.

*Tune-up Chemically!*

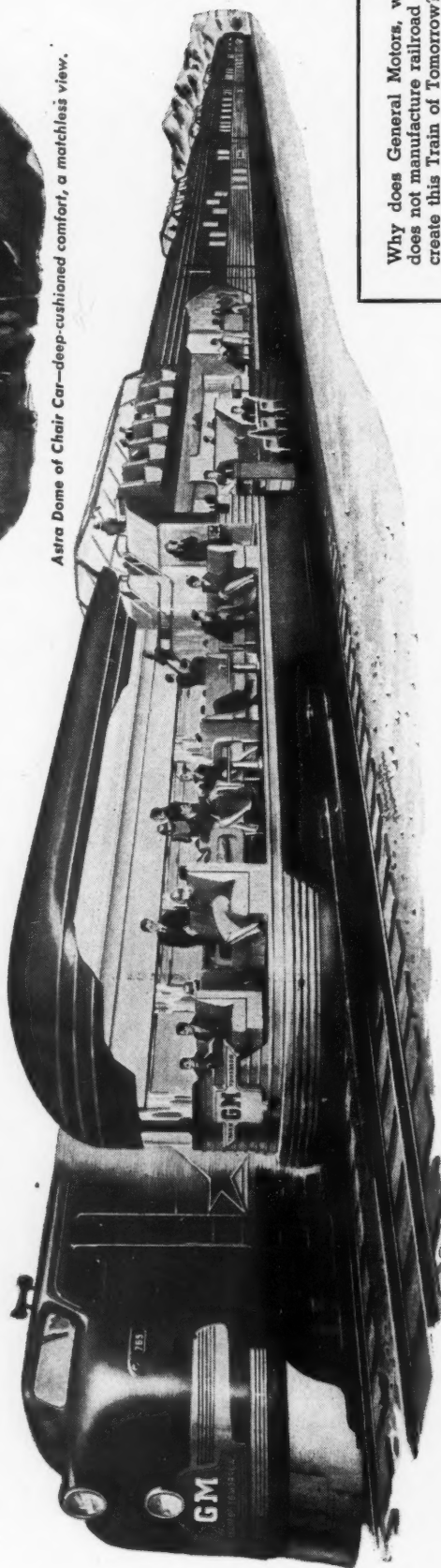
Rx  
ADD 1 QUART OF  
PERMATEX  
TOON-OYL TO 5  
OR 6 QUARTS OF  
ANY TYPE OF  
MOTOR OIL IN THE  
CRANKCASE

**PERMATEX COMPANY, INC., BROOKLYN 29, N. Y.**

# It's years ahead of schedule General Motors' Exciting New Train of Tomorrow



Astra Dome of Chair Car—deep-cushioned comfort, a matchless view.



Starting this month, this Diesel-powered train of the future will bring to many leading American cities a preview of some of the luxurious comforts in store for railroad travelers.

This new and wonderful train is unlike any that ever rolled into your local station. As yet, it isn't on the schedule of any railroad. But in it you'll see equipment and appointments which we hope will provide new enjoyment, comfort and utility in future railway travel.

Stroll through the Train of Tomorrow and see the many new and better things

for the first time assembled in one complete train.

Conceived by General Motors engineers and stylists, this new train, from the powerful Diesel locomotive to its unique and beautiful observation car, is packed

throughout with vivid and stimulating ideas for future travel pleasure. Among these is the Astra Dome, a 32-foot glass-enclosed observation deck built into the roof of every car

—giving passengers a giraffe's-eye view of the passing landscape and skyline.

You'll see a roof garden diner—a sleeping car rich in space, good taste and comfort. You'll see a super-restful, roomy chair car—a luxuriously appointed observation lounge.

"MORE AND BETTER THINGS FOR MORE PEOPLE"  
**GENERAL MOTORS**

THE PEOPLE PROFIT  
WHEN A BUSINESS PROSPERS

Local newspapers will tell you when this blue and silver dream-come-true will be on display in your section of the country. Be sure to see it.

Why does General Motors, which does not manufacture railroad cars, create this Train of Tomorrow?

Because Electro-Motive, Frigidaire, Hyatt Bearings, Delco Products and Detroit Diesel Engine Divisions of General Motors provide the railroads with such important products as Diesel locomotives, Diesel-Generator sets, anti-friction journal bearings and refrigerating and air-conditioning equipment.

Because all through our history we have been interested in the improvement of all forms of travel, and creating this train has given us still another opportunity to fulfill our aim of "MORE AND BETTER THINGS FOR MORE PEOPLE."

On the Air: HENRY J. TAYLOR, Monday and Friday evenings, over 350 Mutual stations, coast to coast. Hear him!

CHEVROLET • PONTIAC • OLDSMOBILE • BUICK • CADILLAC • GMC TRUCK & COACH • BODY BY FISHER • FRIGIDAIRE • GM DIESEL • ELECTRO-MOTIVE • DELCO PRODUCTS • HYATT BEARINGS



**COMEBACKS  
ARE NO JOKE SON!**

That's why more and more repairmen are using Moog X-Plus Piston Rings — the rings that give Full Power results in motor reconditioning.

This famous Full Power Piston Ring combination licks oil pumpers, restores power, makes worn motors perform like new.

Ask your Moog Full Power jobber to tell you the Full Power story and demonstrate the revolutionary Moog method of piston expansion.

## **MOOG PISTON RING CO.**

Division: MOOG INDUSTRIES, INC., ST. LOUIS 14, MO.

MOOG X-PLUS FULL POWER PISTON RINGS  
MOOG COIL ACTION FRONT END PARTS  
MOOG ELECTRICALLY HEAT TREATED SPRINGS



(U. S. PAT. NO. 1,771,198)



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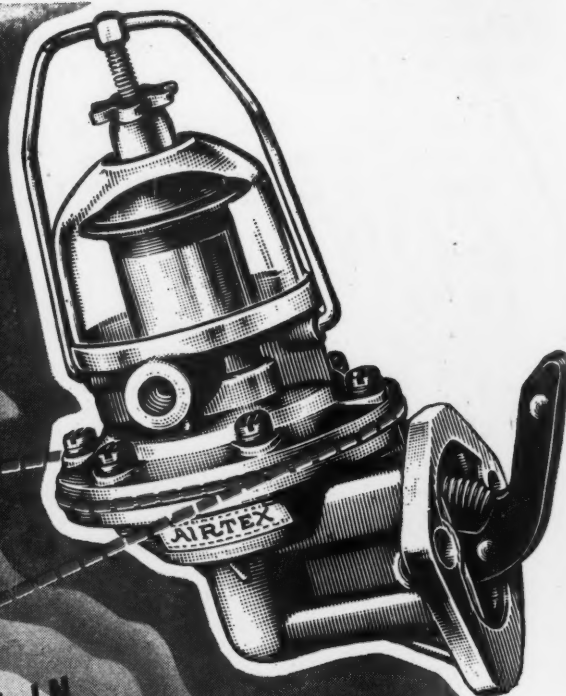
JUNE, 1947

When writing to advertisers please mention Motor Age

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MOTOR AGE, Vol. LXVI, No. 7. Published monthly by Chilton Co., Chestnut & 56th Sts., Phila. 39, Pa. Entered as Second-Class Matter December 27, 1935, at the Post Office at Philadelphia, Pa.; Under the Act of Congress of March 3, 1879. In case of Non-Delivery Return Postage Guaranteed. Subscription price: United States, Mexico, United States Possessions, and all Latin-American countries, \$2.00 per year. Canadian and foreign, \$3.00 per year; single copies, 25 cents.

OVER 75,000,000  
FUEL PUMP  
PULSATIONS  
without a CRACK  
or PUNCTURE  
in this DIAPHRAGM



STAMINA AND QUALITY ARE BUILT IN

# AIRTEX

FACTORY TESTED

## FUEL PUMPS

Assembled with AIRTEX Diaphragms  
Guaranteed for 50,000 Miles

Almost incredible that a flexible diaphragm can take so much punishment. Yet tests repeatedly prove AIRTEX outlasts its 50,000-mile guarantee. In every detail of construction, material and workmanship AIRTEX Fuel Pumps are built for stamina.

**AIRTEX AUTOMOTIVE DIVISION**  
Chefford Master Mfg. Co., Inc.  
FAIRFIELD, ILLINOIS

YOUR PROFITS  
CLIMB WITH THE  
AIRTEX LINE



ORDER FROM  
YOUR JOBBER

Sell an AIRTEX Gasoline Filter with Pulsation DAMPER, with every carburetor or fuel pump job





# *No bare spots in the* **Delco-Remy Line**

ORIGINAL-EQUIPMENT PARTS

You'll find that the Delco-Remy line "covers the ground"—completely and thoroughly.

Year after year, Delco-Remy electrical equipment is original equipment on America's leading cars, trucks and buses. Since these vehicles depend on Delco-Remy replacement parts to maintain peak performance, the Delco-Remy line has its "roots" in a sound and growing market.

You won't have trouble with "bare spots," either. The Delco-Remy line includes parts for older model cars and other small-demand parts, *as well as* fast-movers you'll use in everyday service.

For a steady growth in electrical service business, make the most of the Delco-Remy line. It's the recognized leader in the original-equipment field.

## **DELCO-REMY ELECTRICAL EQUIPMENT FOR AIRCRAFT**

*Delco-Remy, long the leader in automotive electrical equipment, is now building electrical equipment for aircraft. Delco-Remy will make available the same strong merchandising and service support in this field as it has in the automotive field.*



**DELCO-REMY—A UNITED MOTORS LINE**  
Available Everywhere Through  
**UNITED MOTORS DISTRIBUTORS**

# **Delco-Remy**

DIVISION, GENERAL MOTORS CORPORATION  
ANDERSON, INDIANA

**WHEREVER WHEELS TURN OR PROPELLERS SPIN**

# Pedrick Franchise Dealers have a GUARANTEE that really SELLS!

**THE PIERCE COMPANY**  
BETHLEHEM PIKE AT CHESTNUT AVENUE  
Chestnut Hill, Phila. 18 November 26 1946.

Mr. George Williams  
21 E. Maines St.  
Philadelphia, Pa.

No Receipt Will be Returned Unless Requested. Your Enclosed Check is Return \$

Paid by Check No. \_\_\_\_\_ Date \_\_\_\_\_ T. P. LOWRY, Inc.

(RETURN THIS COUPON TO PEDRICK)

Engine Repairs	
Expand Pistons	
Replace Valve Guides	
New Caskets	

**Pedrick PISTON RINGS**  
GUARANTEED SET No. 340802

000/00



One of the 5-star features enjoyed by every Pedrick Franchise Dealer is the industry's most liberal ring-and-labor guarantee —practically an insurance policy on the shop's labor.

But far more than that . . . Pedrick makes its guarantee a real *selling* tool for the dealer. Take the Certificate of Guarantee, for example. You make it out for each customer, sign it, and give it to him. Attach it to your bill for the motor job when you present it to the customer. Let him see for himself that you have given him a piston-ring job guaranteed both by you and by Pedrick.

Watch with how much more satisfaction he pays his bill! Notice his increased contentment and confidence in your work and in your service. Observe, too, that this practice creates a lot of favorable comment for the Pedrick Franchise Dealer's business.

Yes, the Pedrick Franchise Dealer Plan gets engine repair jobs for Pedrick Dealers through the confidence-building GUARANTEE, through SERVICE INFORMATION, through LOCAL MERCHANDISING AIDS, through NATIONAL ADVERTISING, through an IDENTIFICATION SIGN . . . a 5-star program that *works*. Ask your Pedrick jobber or write now to WILKENING MANUFACTURING CO., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co. (Canada) Ltd., Toronto.

For 27 Years, Supplier of Piston Rings to Leading Vehicle and Engine Manufacturers

# Pedrick

## 'HEAT-SHAPED' PISTON RINGS

**Pedrick PISTON RINGS** Report of Guaranteed INSTALLATION No. 340802

This is vehicle owner's certificate that the Pedrick Piston Rings installed under this record are Guaranteed Against Breakage One of 88

Installed Pedrick ENGINEERED SET No. E 5

If Truck or Bus, give Engine Make and Model when:

Date of Installation: \_\_\_\_\_

(If Used Car, date car was sold and other instructions)

Car Make Chevrolet Year 1930 Owner George Williams

Speedometer Reading 80829 Address 21 E. Maines St., Phila.

Dealer's Name (Print) James Garage

City SOLE GARMENTOWN Ave. Phila. Zone No. 80 State PENNA.

The original copy of the Certificate of Guarantee is for your customer. Attach it to your bill. The duplicate is for your own records, and incidentally provides you with an excellent mailing list of customers for future follow-up. The triplicate is a self-addressed mailing card that you mail to Pedrick headquarters.

The Engine in this vehicle has been reconditioned with a **Pedrick ENGINEERED SET OF PISTON RINGS**

Guaranteed to deliver satisfactory economy under the terms of the Pedrick Guarantee Agreement . .

A special sticker for the dashboard of each vehicle you recondition. Calls your guarantee to the attention of owner's friends and passengers.

**TO THE PUBLIC**

THIS IS TO CERTIFY THAT:

Has satisfactorily met all our requirements as to ability, experience and reputation, and has been appointed a Pedrick Franchise Dealer-Shop authorized to install

**Pedrick ENGINEERED SETS OF PISTON RINGS**

**GUARANTEED AGAINST OIL PUMPING**

I under the terms of the Pedrick Franchise Dealer Plan agree:

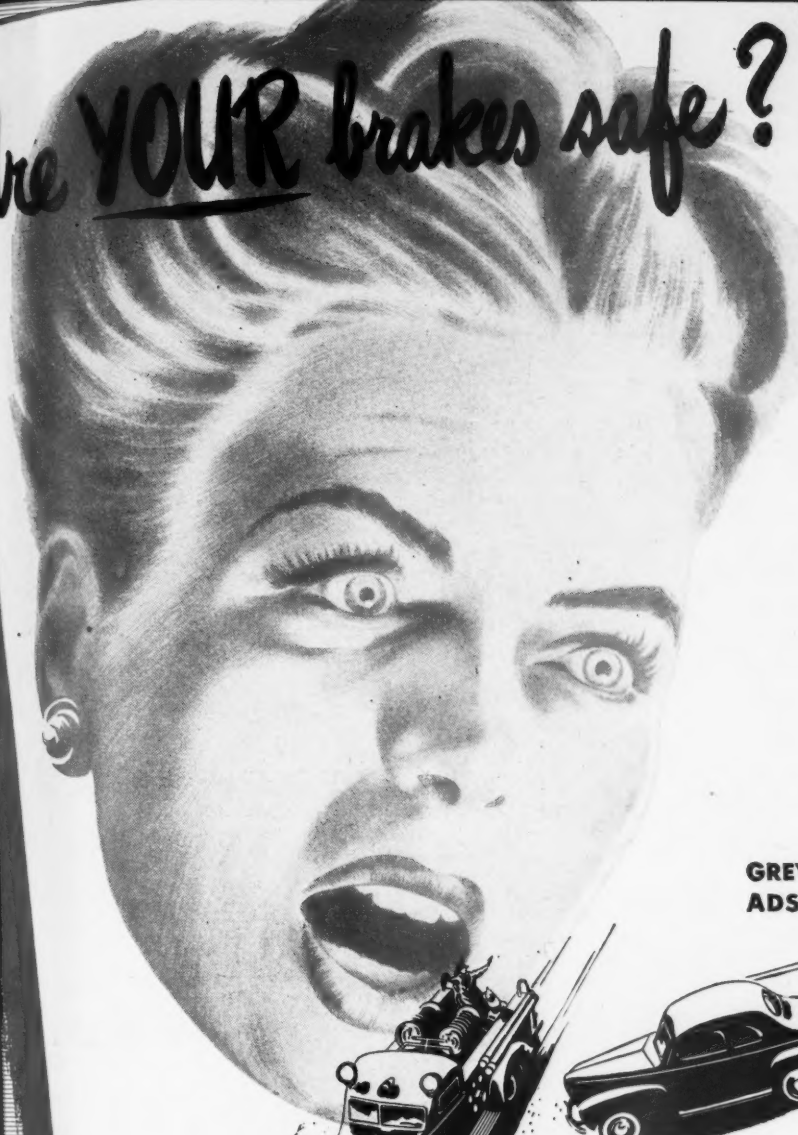
Printed at Philadelphia: **WILKENING MANUFACTURING CO.**

BY WITH CONFIDENCE *Pedrick*

Attractive Guarantee Franchise Certificate inscribed with your name, for display in your shop.



Are **YOUR** brakes safe?



**YOUR CUSTOMERS  
KNOW THEIR BRAKES  
WILL BE SAFE . . .**

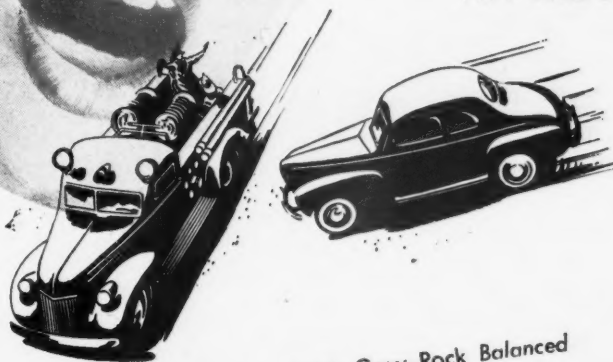
and you know that your brake-jobs will be right . . . when relined with Grey-Rock Balanced Brake Linings.

In big, colorful ads like this, we're telling car-owners how much the Grey-Rock name means in brake safety . . . and we're recommending that they get brakes inspected regularly at a shop that uses Grey-Rock linings, in accordance with Grey-Rock methods based on National Safety Council standards.

See your Grey-Rock jobber now. He'll tell you how to cash in on this powerful Grey-Rock campaign! He also has complete information on Grey-Rock Balanced Linings for bonding.

**GREY-ROCK BUILDS BUSINESS FOR YOU WITH  
ADS LIKE THIS, APPEARING REGULARLY IN**

**POST  
Collier's  
Holiday**

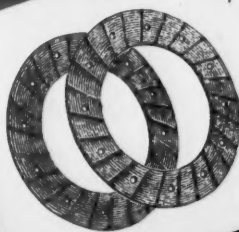
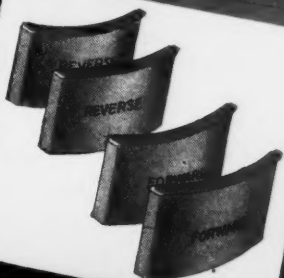


**YOUR BRAKES WILL BE SAFE . . . With Grey-Rock Balanced  
Brake Linings!**

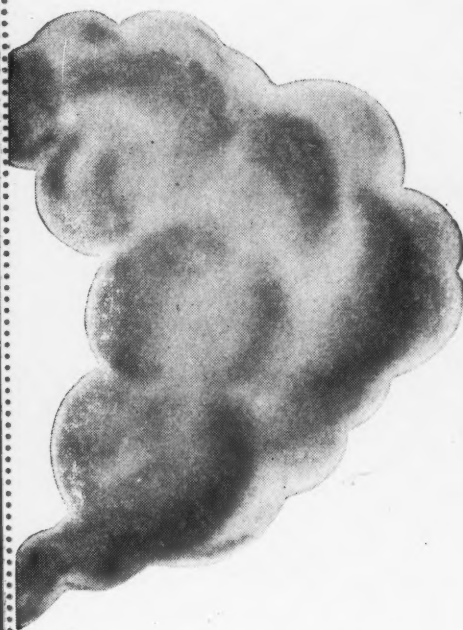
For brake-safety month in and month out, have your brakes inspected regularly at a shop that uses Grey-Rock. The Grey-Rock will make

**Grey-Rock** 

**BALANCED BRAKE LININGS**



**Performance**  
**goes up**  
**in smoke...**

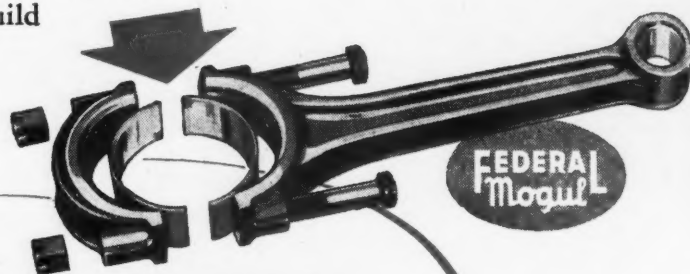


**when**  
**worn connecting rod bearings**  
**cause oil pumping**

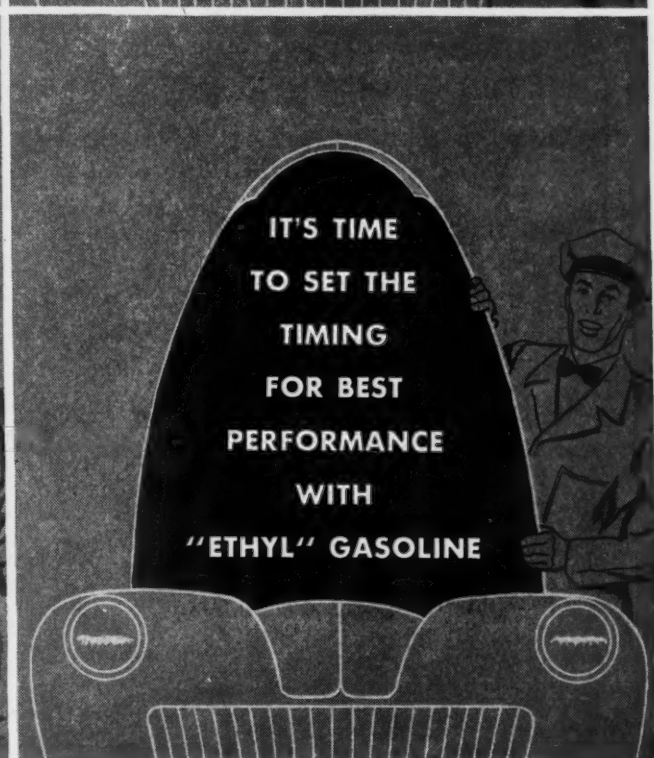
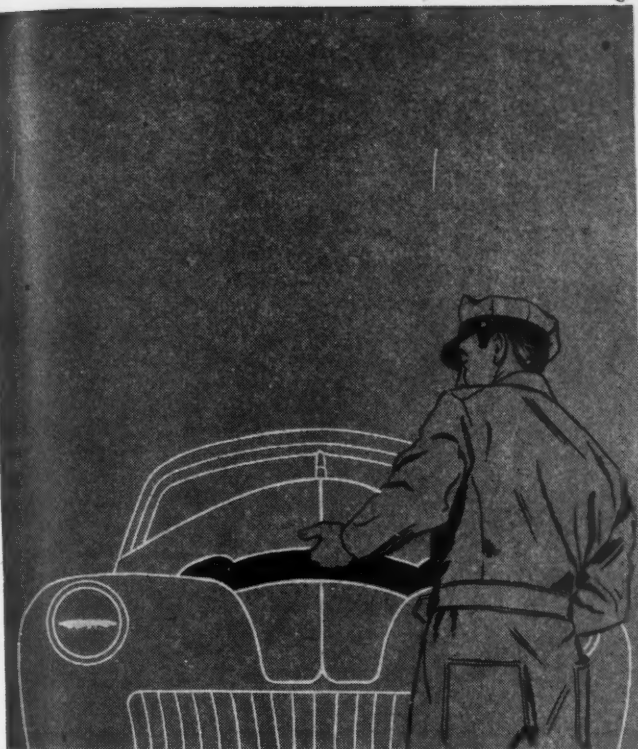
Smoky exhaust means worn engine bearings. They let excess oil reach combustion chambers, burn to fouling carbon on pistons, rings, valves, and spark plugs. One badly worn bearing can oil-starve others, result in costly crankshaft damage. Do the job right. Replace worn bearings in sets with genuine Federal-Mogul Oil-Control Bearings. Restore pep, economy, power and build lasting customer satisfaction.

**FEDERAL-MOGUL SERVICE**

DIVISION OF FEDERAL-MOGUL CORPORATION  
**COLDWATER, MICHIGAN**



**Replace in Sets with Genuine**  
**FEDERAL-MOGUL**  
**Oil-Control Bearings**



If you've had to pull the timing back a bit on customers' cars to eliminate knocks caused by lower-quality gasoline—here's good news. Gasoline quality is coming up again. Particularly "Ethyl" gasoline. So there's nothing to stop you from setting the timing up where it belongs—giving your customers the kind of power and performance they like.



**ETHYL CORPORATION**, Chrysler Building, New York 17, New York. Products sold under the "ETHYL" trade-mark—Antiknock Compound . . . Detergent Cleaner . . . Salt Cake . . . Ethylene Dichloride . . . Sodium Metallic . . . Chlorine (liquid) . . . Oil Soluble Dye.



For a bigger share of  
the travel business...



THE ELECTRIC AUTO-LITE COMPANY  
Merchandising Division

Toronto, Ontario

Toledo 1, Ohio

**AUTO-LITE**

# Switch to AUTO-LITE

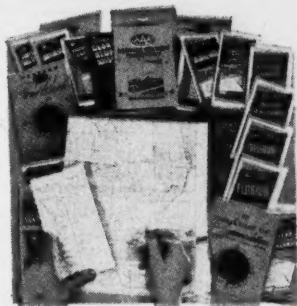
## NATIONAL MAGAZINES

National magazines and great Sunday newspapers tie in the powerful travel theme in striking color . . . reaching 27,850,000 farms and homes.



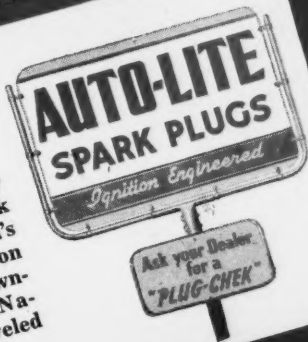
## AAA MAPS AND BOOKS

AAA maps and books carry Auto-Lite advertising exclusively . . . reach America's top motorists when they are planning trips or traveling.



## HIGHWAY SIGNS

Highway signs say "Auto-Lite Spark Plugs" to America's thirty-two million car and truck owners along the Nation's most traveled highways.



## NETWORK RADIO



The Auto-Lite Summer Show featuring Parker Fennelly as "Lawyer Tucker" takes over while Dick Haymes vacations—Tune in Thursday evenings. 153 CBS stations.

# SPARK PLUGS

IGNITION ENGINEERED BY IGNITION ENGINEERS



# *Big News from*

**Bigger Earnings for You**

**NUGGETS ARE BACK**



# NEW

Tradition-smashing Blackhawk Nugget-Socket Wrenches are back in a sensational new design. Take a look at the new palm-fitted, non-slip handle! "Feel" how comfortably it will snuggle into your hand! No ugly grease-catching cross-knurls or blister-raising edges. And that Bullet Case is designed for work—carry it to the job—roll it as you work—"scoop" the wrenches out with ease. These are just a few of the extras you get in the new Nuggets. *And, most important,* super-strength Nuggets (made of Hexite steel) do all general work—their double-duty drive eliminates all need for either 3/8" or 1/2" drive wrenches—saves you 40% on your wrench investment. Ask your Blackhawk Jobber to show you how Nuggets save you money.

# BLACKHAWK.



# *Blackhawk!*

**Mechanics and Shop Owners**

**BANTAM IS BACK**



# NEW

Yes, sir, from pump — to case — to Spee-D-Coupler, the famous Blackhawk 2-ton Bantam Porto-Power is new — restyled to give you big extra utility, greater profits. The Torpedo Case can be rolled or carried and does a sweet job of merchandising your work. "Fool-proof" is the word for the compact new pump — redesigned for even faster work on body and shop jobs. The ram now quickly uncouples so the same pump can serve the famous Wedgie — thanks to the new Bantam Spee-D-Coupler. From every angle the new Bantam is terrific and an even bigger profit-maker for you. Bantam Porto-Power has neither equals nor imitators! See your Blackhawk Jobber about the postwar 2-ton Bantam Porto-Power today.

Products of BLACKHAWK MFG. CO., MILWAUKEE 1, WIS.

*Birthplace of Equipment Styling*



# Quick Starts ... Long Life

**WILLARD BATTERIES** — Automobile  
Truck and Bus • Radio • Motorcycle  
Tractor • Aircraft • Marine • Diesel  
Stationary — Sold and serviced  
by Willard Dealers everywhere.

**"SAFETY-FILL"  
BATTERIES  
Willard**

**Dependability • Performance • Long Life**

**WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO**



TAKE A TIP FROM ONE WHO SPEAKS FROM EXPERIENCE

*For Better Brakes..*

# REFILL...

*Brake Systems with Genuine*

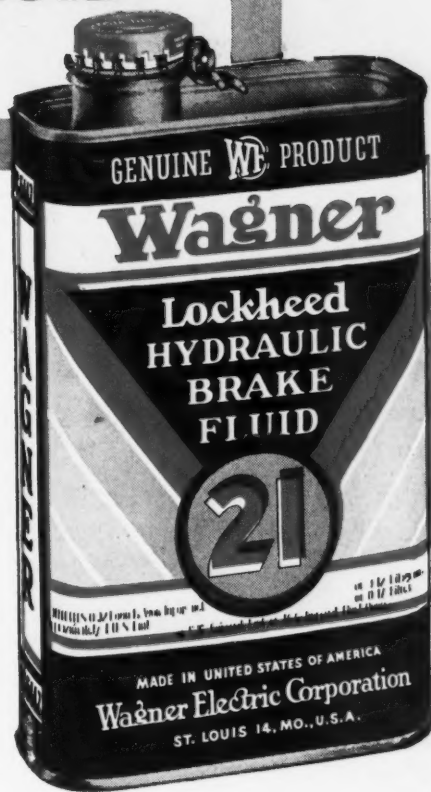
## WAGNER LOCKHEED HYDRAULIC BRAKE FLUID

Wagner Lockheed No. 21 is a proved and accepted Brake Fluid. It is unsurpassed for dependable performance, and mixes with all other approved types of brake fluid. As an all-season fluid it functions perfectly under all driving temperatures.

No. 21 is used by car, truck and bus manufacturers. It is warehoused throughout the U. S. and Canada, and, like Lockheed Hydraulic Brake Parts and CoMaX Brake Lining, is available everywhere through Wagner jobbers.

**Wagner Electric Corporation**

6498 PLYMOUTH AVENUE, ST. LOUIS 14, MO., U. S. A.



LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • NoRel  
CoMaX BRAKE LINING • AIR BRAKES • TACHOGRAPHS  
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

H47-6

JUNE, 1947

*When writing to advertisers please mention Motor Age*

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## Good things come in *MōPār* small packages

The "good things" in MOPAR Service Packages are *all* the parts necessary to perform a given repair job completely and correctly.

That's why repairmen the country over choose these convenient service packages for servicing vehicles built by Plymouth, Dodge, De Soto, and Chrysler.

MOPAR Service Packages are available for water pump, brake, universal joint, and many other service jobs. What's more, the MOPAR Parts in every package are factory engineered and inspected for accurate fit and high quality.

So . . . whenever you service cars or trucks that are built by Chrysler Corporation, be

sure that you use MOPAR Service Packages. They make it easier for you to do a better repair job in less time. And that's the kind of service that builds customer satisfaction and good will!

AND HERE'S THE WAY TO GET  
MOPAR SERVICE PACKAGES



You can get MOPAR Service Packages and individual parts for Plymouth, Dodge, De Soto, or Chrysler cars and Dodge "Job-Rated" Trucks from dealers for these vehicles.

CHRYSLER CORPORATION—PARTS DIVISION—DETROIT 31, MICHIGAN



Factory Engineered and Inspected for  
**PLYMOUTH • DODGE**  
**DE SOTO • CHRYSLER CARS**  
**DODGE "Job-Rated" TRUCKS**

# BURD WINS AGAIN AT INDIANAPOLIS MAURI ROSE MAKES IT FOUR OUT OF SEVEN

None of the thirty previous 500-mile races at Indianapolis was as thrilling as the 1947 Memorial Day contest. In a sleek, low-slung car designed and built by former race driver Lou Moore, Mauri Rose roared past his team-mate, Bill Holland, took the lead with but 17 miles to go. For Moore, the most respected race car builder in the business, it was a story-book, one-two finish. It was a big day for Burd, too, because Burd "Graf-Flox" Piston Rings were used in both of Moore's sensational new cars. So, to Burd's ever-increasing prestige with drivers and owners in speedway, dirt track, midget and stock car racing is added the impressive record of four Indianapolis victories in the past seven events.

**BURD PISTON RING COMPANY, ROCKFORD, ILLINOIS**



MAURI ROSE  
DID IT IN 1947

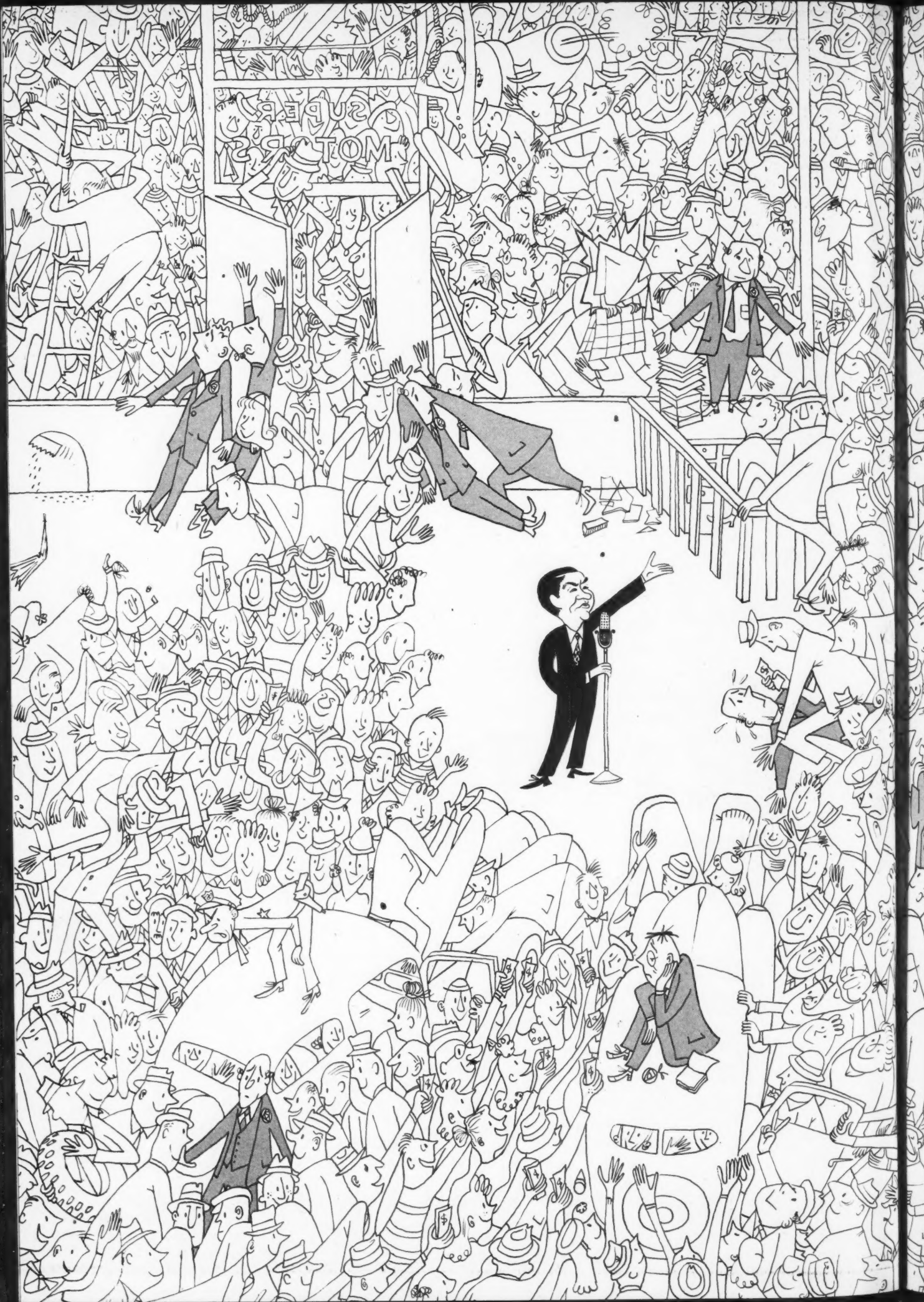


WILBUR SHAW  
DID IT IN 1937

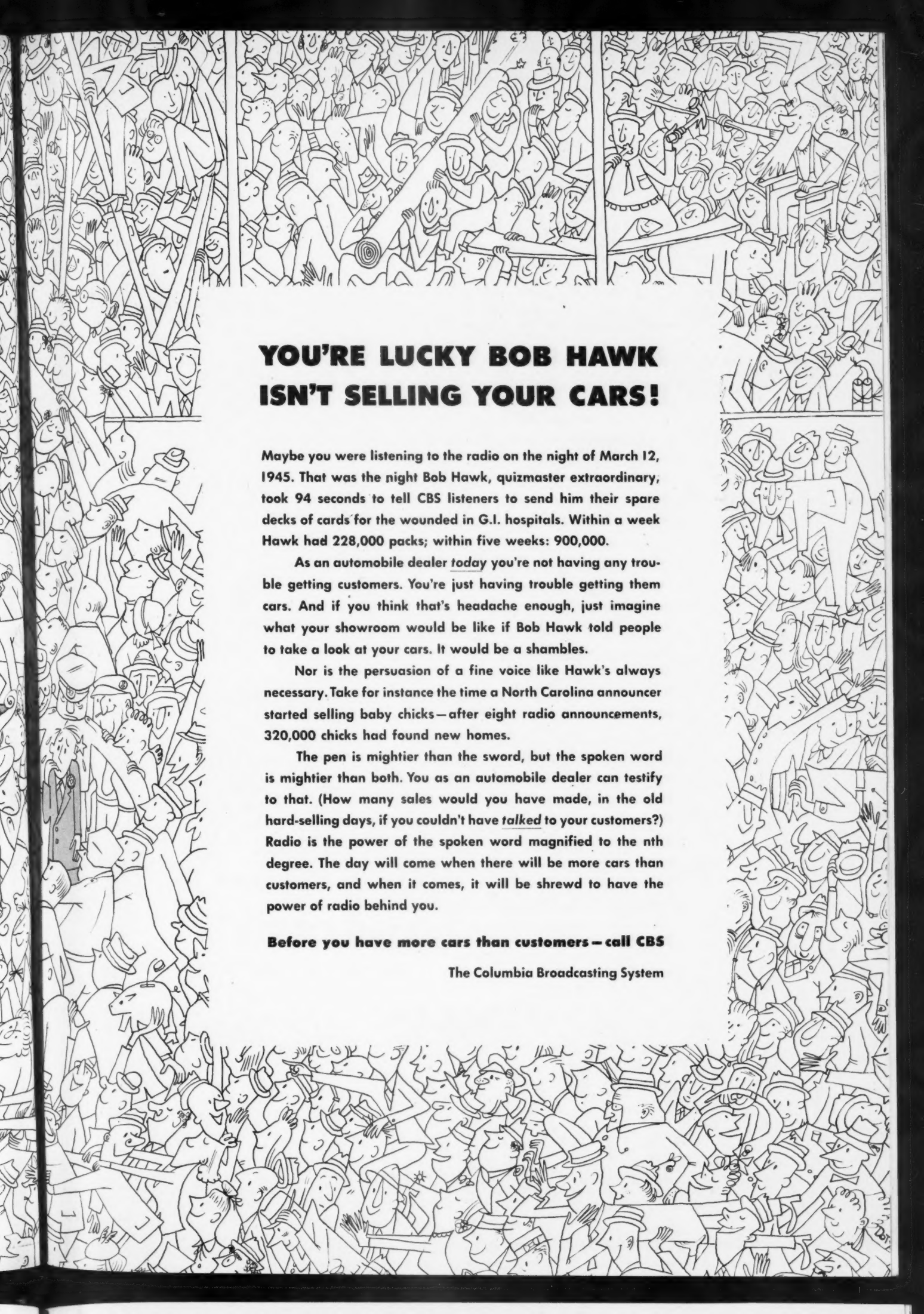
FLOYD ROBERTS  
DID IT IN 1938











## YOU'RE LUCKY BOB HAWK ISN'T SELLING YOUR CARS!

Maybe you were listening to the radio on the night of March 12, 1945. That was the night Bob Hawk, quizmaster extraordinary, took 94 seconds to tell CBS listeners to send him their spare decks of cards for the wounded in G.I. hospitals. Within a week Hawk had 228,000 packs; within five weeks: 900,000.

As an automobile dealer today you're not having any trouble getting customers. You're just having trouble getting them cars. And if you think that's headache enough, just imagine what your showroom would be like if Bob Hawk told people to take a look at your cars. It would be a shambles.

Nor is the persuasion of a fine voice like Hawk's always necessary. Take for instance the time a North Carolina announcer started selling baby chicks—after eight radio announcements, 320,000 chicks had found new homes.

The pen is mightier than the sword, but the spoken word is mightier than both. You as an automobile dealer can testify to that. (How many sales would you have made, in the old hard-selling days, if you couldn't have talked to your customers?) Radio is the power of the spoken word magnified to the nth degree. The day will come when there will be more cars than customers, and when it comes, it will be shrewd to have the power of radio behind you.

**Before you have more cars than customers — call CBS**

The Columbia Broadcasting System



## THE ANDREWS LINE . . .

**Your Best Electrical Connection!**



### ANDREWS CHANGE-OVER KIT

Modernize the old car with Push Button Starting. Inexpensive — convenient — dependable. The Andrews Electric Change-Over Kit for Fords and Chevrolets, includes Solenoid Starter Switch, push button, starter cable and wire — all necessary parts to change over the older cars to easier push button starting. Only two numbers to stock: No. K100 for Fords—No. K101 for Chevrolets.

CUSTOMER SATISFACTION SINCE 1921

**Andrews**  
MANUFACTURING CO.  
ST. LOUIS, MO.



# IMPERIAL FLEXIBLE FUEL LINES

*This Green Hose Identifies a Better Gas and Oil Line*



## PRESSURE TESTED

Assemblies are regularly tested as they come off the production line under pressures far higher than are ever encountered in service.



**SERVICE PROVED** Hose is laboratory tested—field proved. Has special synthetic lining which easily withstands heat, cold, gasoline, oil, grease, vibration and constant flexing. High quality fabric covering has flexible lacquer finish.

## TUBULAR LABEL TELLS ALL

Shows catalog number, makes and models of cars on which line is used. Catalog number is also stamped on metal fitting for permanent identification.



## PERFECT FIT

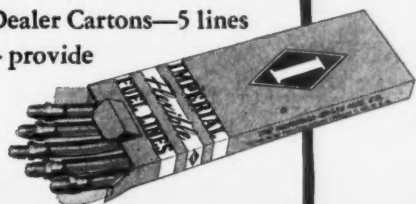
Fittings are accurately machined—assuring trouble-proof installation. Are securely swedged to hose.



## RIGHT AT YOUR FINGER TIPS

All the most needed flexible fuel lines are included in this Imperial "Broad Coverage" Merchandiser. No. 161-FT has 30 lines (illustrated)—covers 90% of all jobs. No. 160-FT has 15 lines—covers 82% of all jobs.

Three-Color Dealer Cartons—5 lines to a carton—provide convenient purchasing units.



THE IMPERIAL BRASS  
MANUFACTURING CO.  
1217 W. Harrison Street  
Chicago 7, Illinois

## LOOK FOR THIS HOSE

- ★ IT'S GREEN
  - ★ IT'S GREAT
  - ★ IT'S IMPERIAL
- SEE YOUR JOBBER

# IMPERIAL

Brass Fittings • Flexible Fuel Lines  
Tube Working Tools • Battery Hydrometers  
Barrel Faucets • Welding Equipment





**STEPPIN' AHEAD**

# LEAK-PROOF

REG. U.S. PAT. OFF.

## PISTON RINGS



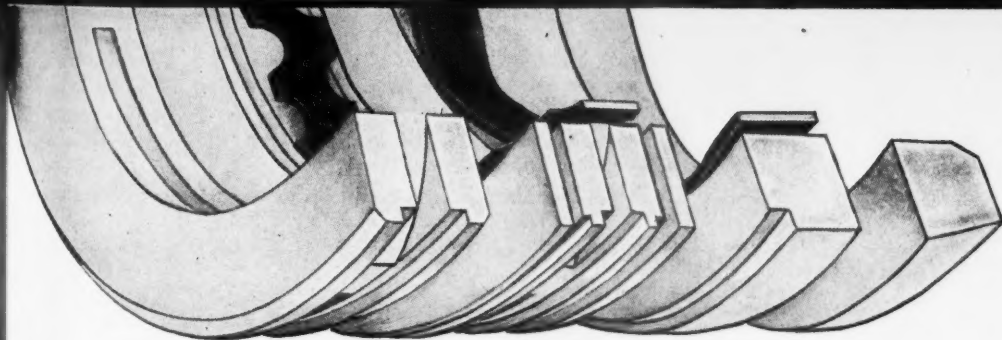
OUT IN FRONT in design, performance and acceptance, LEAK-PROOF Piston Rings are really doing a job. Packaged in sets, they work together... help each other... control perfectly any type of lubricating oil. It's LEAK-PROOF for motors—LEAK-PROOF for you!

**A NEW PRODUCT OF McQUAY-NORRIS**

# OF THE PARADE



**GUARANTEED TO DO ALL 4**



**Yes GUARANTEED**

...guaranteed to give satisfactory performance for 10,000 miles or one year, whichever shall occur first, under the McQuay-Norris LEAK-PROOF Piston Ring Replacement and Labor Guarantee available upon request.

**1**

**KEEP OIL DOWN**

**2**

**KEEP POWER UP**

**3**

**GIVE SMOOTH NEW MOTOR OPERATION**

**4**

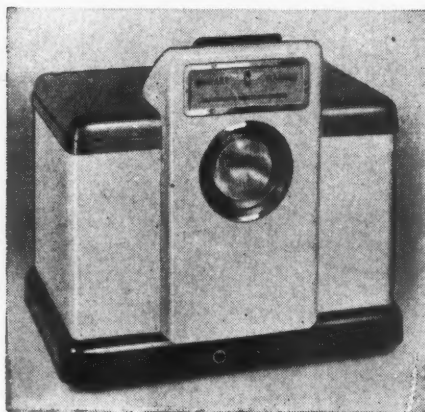
**GIVE LONGER LIFE**

**MANUFACTURING CO. ST. LOUIS 10, MO.**

# Two More New Products of Stewart -



It's easy. Anyone can learn to do it. As the wheels are spinning, the dial tells you the DEGREE of unbalance—the stroboscopic lamp reveals the POINTS of unbalance.



A complete, self-contained unit with all accessories stored inside. Stainless steel top, baked enamel finish, chromium trim.

## **A Compact, Portable, Wheel Balancing Department ... Does What No Other Wheel Balancer Can Do.**

Now you can balance wheels to electronic precision while the wheels remain on the car or truck in true operating position!

Without turning a dial or setting an indicator, using only one plug-in, you do a perfect job every time, in less time, with less work.

And because the unit merchandises itself and your modern service, you get more wheel balancing jobs. Then, you turn them out better and faster at higher net profit. Those extra profits enable you to quickly pay for the unit.

For a demonstration and complete information contact the nearest Alemite Distributor, or write Stewart-Warner Corporation, 1857 Diversey Parkway, Chicago 14, Illinois.

### **READ THESE EXCLUSIVE FEATURES:**

- Balances for both kinetic (static) and dynamic unbalance.
- Balances front and rear wheels electronically without removing them from the car, or light truck, or heavy truck.
- Balances wheels while running on their own spindles in true operating position.
- Balances tire, tube, wheel, hub cap, hub and brake drum as one unit.
- Balances wheels at operating conditions up to 100 mph.
- Detects defective or worn parts that cannot be corrected by balancing.

# STEWART-WARNER



# Warner to make you money!

New ALEMITE  
**Versatal  
Equipment**  
For Spraying  
UNDERBODY COATING



Any man can be quickly trained to do a perfect and profitable job of applying underbody materials.

## Does the Job Faster, Easier, Better at Greater Profit

All over America, car service men are discovering a gold mine in the spray application of underbody coating.

Now, the famous Alemite Versatal spraying equipment has been engineered to do underbody coating work faster, easier than any other make.

The powerful air operated pump handles coating materials direct from original drums, either located in the work area or in some adjoining room. There's no handling of materials—no mess, no waste.

The hose is light and flexible—easier and less fatiguing to handle. The average operator can spray 5 to 8 cars without changing the drum. And, each sprayed car represents a net profit of around \$17!

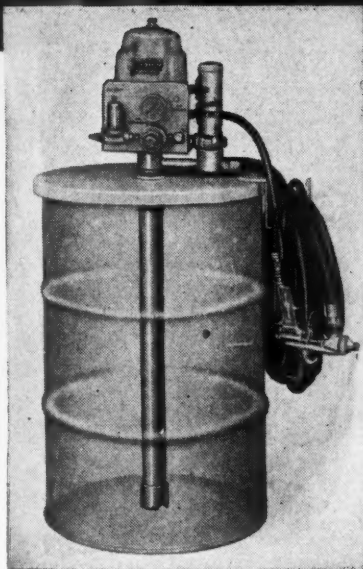
### READ WHAT USERS SAY:

"New and old cars alike represent a market for underbody coating. The first 5 months we took in \$3700 at an average profit of 33 1/3% thanks to the new Alemite Versatal Equipment."  
(Name on request)

"Car owners come in and request this protection. They like the way underbody coating deadens road rumble, squeaks and rattles. They want to be sure their new car won't rust out from below. Our average

profit on each job is around \$20."  
(Name on request)

These are just some of the hundreds of Versatal users who report phenomenal business, easy sales and high profits on underbody jobs. For complete details, costs and installation data, contact your nearest Alemite Distributor, or write Stewart-Warner Corporation, 1857 Diversey Parkway, Chicago 14, Illinois.



The complete Versatal unit fits any standard drum. Operates off your regular air line or compressor.

# CORPORATION





# LISTEN, MISTER... Modern Demand

● The days of "creep-under-crawl-out" service are over. No longer can a shop that *works on its back* compete effectively with a shop that *stands on its feet*!

Not only has the use of a lift for mechanical service proven its value as a time-saver—with actual savings from 20% to 65% depending upon the operation—but it has proven its value in every phase of profitable shop operation . . . better workmanship . . . reduction of lost time due to fatigue and accidents . . . increase in the number and size of jobs handled . . . increased customer confidence and shop prestige . . . and the attracting and holding of better mechanics.

The reason is obvious. Men can work more effectively in a comfortable, natural, upright position. There are fewer colds, backaches and cramps . . . less danger from accidents . . . more room. The mechanics and the operator make more money because they can do better work—faster.

Yes! The days of "creep-under-crawl-out" service are over! Modern service requirements demand a lift with an "open work zone" . . . A lift that provides an adequate, comfortable, safe, working space beneath the car free from unnecessary obstructions . . . A lift that is "open for business"—A Walker Electric Lift.

**WALKER MANUFACTURING COMPANY OF WISCONSIN, RACINE, WISCONSIN**

Also Makers of Walker Jacks and Exhaust Silencers

**LEARN THE LESSON OF A MODERN LIFT FOR MODERN SERVICE—NOW!**



This is not a picture of an efficient, happy mechanic. Cramped, unnatural working conditions . . . cold, damp, exposed to accidents and injury. Lost time would pay for a lift.



What a contrast! Here the mechanic works in a healthy, comfortable, upright position. All under-car parts easy to reach, quickly and profitably. Physical exertion reduced to a minimum.

# Walker

## ELECTRIC LIFT...

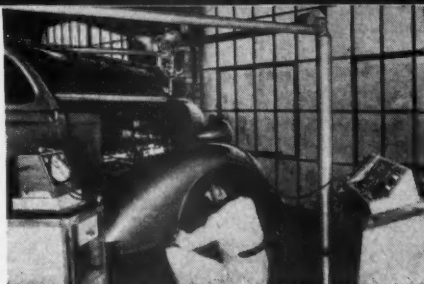
THE

# Service Requirements a Lift with an "Open Work Zone"

THINK OF THESE IMPORTANT THINGS WHEN YOU CONSIDER BUYING A LIFT



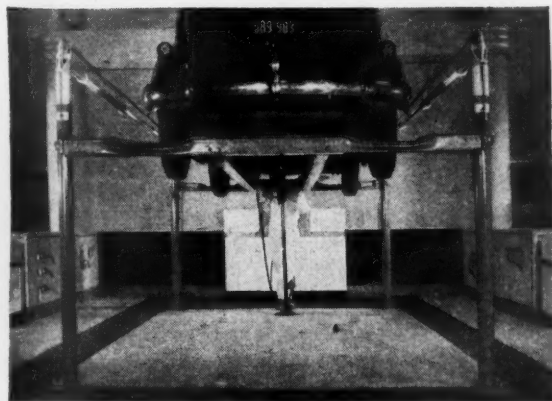
There are no blind spots beneath a Walker "open work zone" Electric Lift. The floor is clear of obstructions—the job is open above. Full freedom for unrestricted use of hands and body pays dividends in better and faster work.



A Walker Lift permits the mechanic to raise the job to any convenient working height from a few inches to full 5 feet. He adjusts the job to his convenience . . . not vice versa. In a few seconds it's up in the air and ready for work.



Walker Lifts sell service, too. Mechanics can inspect, diagnose and report needed service more easily standing than flat on their backs. Owners can be shown the things wrong under the car—and seeing is selling.



Here is the modern lift . . . designed in every detail to the needs of today's service. Easy to install . . . easy to move . . . economical to operate . . . free from all obstructions above and below. The lift with the "open work zone" . . . The Walker Electric Lift.

## \*TIME SAVINGS ON A FEW IMPORTANT JOBS DONE ON A WALKER ELECTRIC LIFT

Brakes, overhaul . . . . .	30-50%
Clutch and Flywheel, remove . . . . .	20-30%
Differential, overhaul . . . . .	20-25%
Exhaust System, repair . . . . .	30-50%
Hand Brake, relining . . . . .	30-40%
Oil Pan, remove . . . . .	20-30%
Propeller Shaft, remove . . . . .	30-50%
Shock Absorbers, service . . . . .	20-30%
Starter, remove . . . . .	30-50%
Steering Linkage, adjust . . . . .	20-25%
Transmission, remove . . . . .	30-50%
Underbody, tighten . . . . .	20-25%
Universal Joint, remove . . . . .	25-40%
Tires, switch . . . . .	25-40%
	50-65%

\* Figures through Courtesy of "MOTOR"

## LIFT THAT IS OPEN FOR BUSINESS



**THE  
FASTEST  
THING  
ON WHEELS**  
PERFECT BALANCE THE FIRST TIME



## THE SCHILDMEIER SEAL LINE WHEEL BALANCER

### SOUTH SAN ANTONIO, TEXAS—

"In Speed and Accuracy, it's ahead of all other BALANCERS!"

### INDIANAPOLIS, INDIANA—

"We balance 70 to 100 wheels a day!"

### PEORIA, ILLINOIS—

"Bringing us shop traffic we wouldn't have otherwise ENJOYED!"

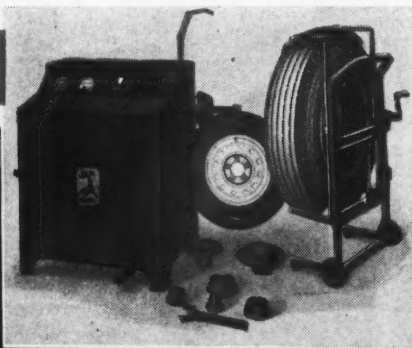
### FORT WAYNE, INDIANA—

"Considering Speed, Accuracy, and Customer Satisfaction—it's the best!"

### CASEY, ILLINOIS—

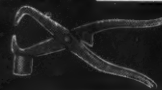
"Biggest Profit Maker I have ever had in 27 years of automotive experience!"

Balances ALL wheels, trucks, busses and cars, DYNAMIC AND STATIC balancing with speed up to 100 M.P.H. — eliminates road testing. Simple to operate. Does it right the FIRST time.



### COMBINATION HAMMER AND WEIGHT PLIERS

A Time-Saver  
... No Looking  
for Hammer  
When Using  
Pliers - Hard-  
ened Tips -  
Plated Finish



**REMEMBER SEAL LINE**  
"The Fastest Thing on Wheels"  
Write...

**H. C. SCHILDMEIER CO.**

310 N. SENATE AVE.

INDIANAPOLIS 2, INDIANA

# MOTOR AGE

With Which Is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

VOL. LXVI, No. 7

June, 1947

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Associated Business Papers, Inc. Subscription Price: United States and Possessions,  
Latin-American Countries, \$2.00 per year; Canada and foreign, \$3.00 per year.  
Single copies, 25c.

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# Our Baby's Doing FINE!

IT'S THE  
MARALOY-  
FINEST MUFFLER  
EVER BUILT!



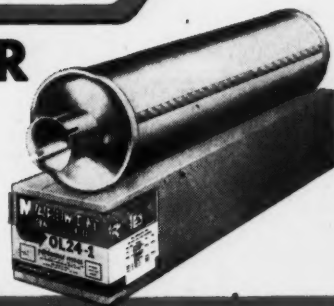
Yes, skilled metallurgical experts at Maremont have been *mighty proud* to father this new steel... which has proved to be more *heat resistant*... *rust resistant*... and *corrosion resistant* than any standard muffler steel!

The advantages of this superior MARALOY Steel... its remarkable durability... its matchless performance... were demonstrated *first* on Maremont's rigorous testing ground... *second* by thousands of enthusiastic, perfectly satisfied motorists.

To learn more about MARALOY Mufflers, see your Maremont Distributor or write to the factory for details.

## The Maraloy MUFFLER

BY FAR THE  
FINEST MUFFLER  
EVER BUILT



# MAREMONT MUFFLERS

SINCE  
1877

Also Manufacturers of Alloy Steel Springs

Maremont Automotive Products, Inc.  
General Offices: South Ashland at  
16th Street - Chicago 8, Illinois

Top ring groove wear licked at last, dependably, economically, with the

## SEALED POWER GI-60

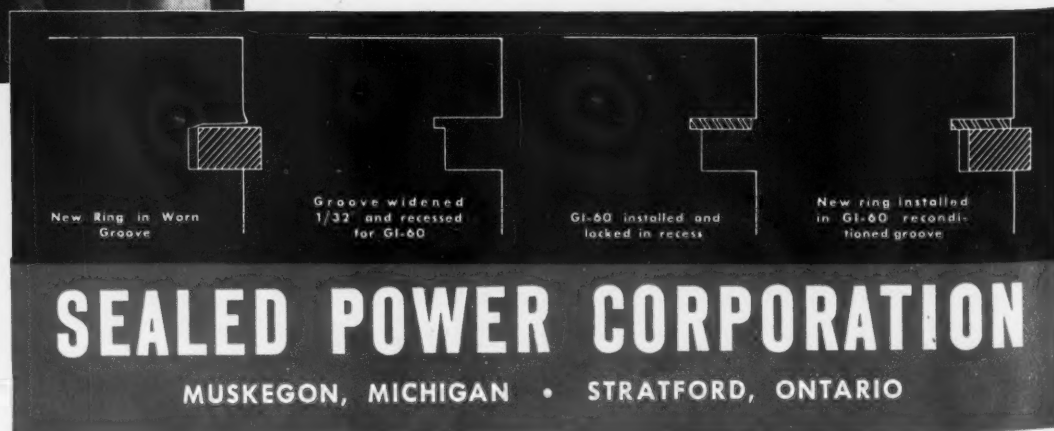


**E**VEN an apprentice mechanic knows that when you put good piston rings into worn top ring grooves, those rings are down for a nine count before they start working. Worn grooves let gas blow by, cause ring damage, cylinder wear, and excessive waste of fuel. If you widen the groove and install a wider ring, you are asking for trouble—because you have changed the original specification of the engine manufacturer. An ordinary spacer means that you have merely put in a wider ring in two sections.

The new Sealed Power GI-60 Contracting Groove Insert is not a "spacer." It does not float. It is anchored securely at the top of the ring groove, which has been re-grooved to an absolutely true surface  $1/32$ " wider than before, with a  $1/32$ " recess at the top. GI-60 fits into this recess, locking itself permanently in place. It forms a heat-treated spring-steel shield that resists wear and pounding of the top land better than either aluminum or cast iron can resist it.

Your Sealed Power distributor is now equipped to furnish this service for you. It is the only dependable, economical answer to top ring groove wear. It is equally effective in worn or new replacement pistons. Cost is low. Benefits are great. GI-60 has been thoroughly field-tested and proved by large commercial fleets. Ask your Sealed Power distributor now for this new Sealed Power service.

**Makes Old Pistons New—Keeps New Pistons Young**







# NEWS BULLETIN

★ By producing 10,000 automobiles in May, Kaiser-Frazer set a new production record for the Willow Run plant. Best previous record was 7,846 in April.

★ Bureau of Labor Statistics reports that total labor turned down in April. Decline is small, but it is the first since October, 1946.

★ Wholesale price index while still considerably higher than corresponding period in 1946, has eased from preceding month.

★ Motor and Equipment Wholesalers Association recently elected officers for the coming term: Frank K. Meyer, President; Erle A. Henderson, Vice-President; Clifton E. Hamlin, Secretary; Howard S. Walters, Treasurer.

★ Kaiser-Frazer reports that it is now making money and stockholders have approved increasing company's common stock from 5 million to 8 million shares.

★ Two new tire production records were set during the first quarter of 1947 when it turned out 20,356,719 passenger car and motorcycle tires and 4,709,537 truck tires. The unprecedented production has filled distribution pipe lines.

★ A. E. Barit, Hudson's president, reports that Hudson has virtually doubled its percentage of the industry's total passenger car business.

★ A new N.A.D.A. radio script to correct public misunderstanding of dealer participation in new car re-sales is now being broadcast by dealers throughout the nation.

★ An interesting survey made and published by the Milwaukee Journal shows that one out of three people needed new tires for their car, with 24.0 per cent needing a full set. Of particular interest is the point that 71.9 per cent of all re-cap tire users were satisfied with the service rendered.

★ Motor Bus travel on urban transit lines reached an all-time high of 1,807,200,000 miles last year, according to the American Transit Association.

★ Packard market is stronger now than it was a year ago, according to Lyman W. Slack, General Sales Manager.

★ Only about 20,000 motor vehicles of all types remain to be sold out of a total of 500,000 declared surplus for disposal, the War Assets Administration reports.

★ Nash has jumped production from 400 to 540 cars per day.

★ Willys production hit 10,904 in May.

★ Deliveries of new Ford tractors will start early in July.

# Starts on the NEWS

## Although Nationwide Volume Is Up Most Shops Feel the Pinch of Competition

Opinions on conditions in the service field vary considerably. Ask a shop owner and he will inform you that business is down. Ask a manufacturer and most of them will state that their lines are holding up well. Actually both answers are correct. National volume of service parts sales is higher than it was for the same period last year and a great deal higher than it was before the war. Wholesale value of parts sold in March, 1947 was \$208,000,000, compared to \$141,749,000 in March, 1946. Other indices show similar trends. Probably the clearest idea of the market's condition can be obtained by pointing out that the figure for March, 1941 was \$52,200,000. However, today's business is being distributed among more shops. Ac-

cording to figures tabulated by MOTOR AGE, there are now 36,400 car dealers and 49,500 independent repair shops, representing an increase of 14 per cent over 1941. So it is natural for the shop owner and operator to feel that business volume has slipped somewhat. For him, it has. Some manufacturers would also be justified in making the same statement for undoubtedly many factories have increased the variety of parts produced and many new factories, sprung up since the war, are claiming their share of the market. However, total volume remains at unprecedented levels.

Naturally a large portion of the total parts produced has gone into jobbers' inventories which have been sadly depleted.

## Pontiac Says 1948 Models Not to Appear This Year

First hint of 1948 model plans by any GM division was made on a negative note by Harry J. Klingler, general manager of Pontiac Division, when he stated recently that Pontiac will not change over to 1948 models this year. He said that demand was so great that his division will confine all its efforts to producing as many passenger cars as possible without interruption. It will be remembered that GM several months ago scrapped its 1948 dies for Chevrolet, Pontiac, and Oldsmobile models, at least in one body style. It is reported that Buick also does not plan to change to its '48 model this Fall. Another report dealing with new models is that steel companies say that at least three manufacturers have received specifications for steel for 1948 models. One of the companies indicated it wanted delivery in the third quarter and the others were for fourth-quarter delivery.

## 1947 New Passenger Car Registrations\*

January and February complete, 44 States for March  
Arranged by Makes in descending order according to the three months' totals.

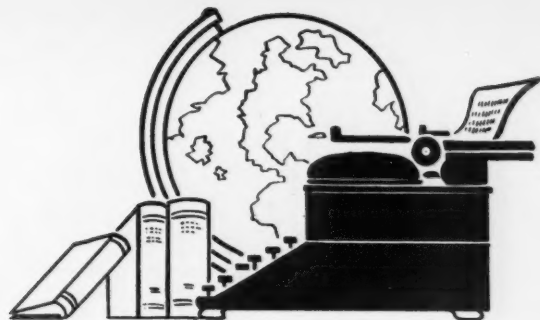
	January	February	March	Three Months	
				Units	% of Total
Chevrolet.....	43,506	38,774	41,287	123,567	19.43
Ford.....	35,442	38,691	37,374	111,507	17.53
Plymouth.....	19,073	22,632	23,105	65,010	10.22
Buick.....	16,158	16,970	15,578	48,704	7.66
Pontiac.....	12,609	14,836	14,150	41,595	6.54
Dodge.....	13,323	13,466	13,106	39,897	6.27
Oldsmobile.....	13,811	13,061	12,300	39,172	6.16
Mercury.....	7,627	8,401	7,877	23,905	3.76
Nash.....	8,398	7,070	7,610	23,078	3.63
Studebaker.....	7,432	7,082	7,337	21,851	3.44
Hudson.....	6,646	7,324	7,673	21,643	3.40
Chrysler.....	6,326	6,313	6,194	18,833	2.96
De Soto.....	4,938	4,830	4,498	14,266	2.24
Cadillac.....	3,570	3,419	3,171	10,160	1.60
Packard.....	2,671	3,004	3,049	8,724	1.40
Kaiser.....	2,402	2,740	2,734	7,876	1.24
Lincoln.....	1,576	1,706	1,659	4,941	.78
Willys.....	1,324	1,429	1,311	4,064	.64
Frazier.....	1,158	1,417	1,475	4,050	.64
Crosley.....	767	916	1,075	2,760	.44
All Others.....	86	50	41	177	.02
Total.....	209,063	214,333	212,602	635,998	100.00

\*—Data from R. L. Polk & Co.

## Association Unity Possible

Since Don McKim has severed relations with the NSPA, it would seem to be an auspicious time to unite some, or all, of the associations.

In the past unity has always failed through clashing temperaments and the inability of one association to supply jobs for the personnel of the individual group. Under present conditions the job would seem to be simpler, and certainly the benefits would be worth the effort.



## Armed Forces Mechanics Have Not Filled the Gap

Becoming increasingly clear is the failure of the Army and Navy to produce really skilled mechanics. During the war many persons in the industry were of the opinion that as soon as the armed forces were demobilized the automotive service would be flooded with highly skilled mechanics who could be relied upon to do a precise job of maintenance.

Such, however, is not the case. Shop operators everywhere are deploing the lack of skilled mechanics. The time necessary to complete a repair job has increased tremendously and "come back" jobs are on the increase. Evidently the procedure in the armed forces was to operate a vehicle as long as it would run and then to junk it. At the best, a complete unit would be replaced rather than the old one repaired. Such maintenance might be satisfactory from a military standpoint, but it does not produce mechanics of a caliber to do satisfactory maintenance and repair in civilian life.

## Factories Deserve Praise

In the battle of the "so-called used car" one point is too often overlooked. That is the forbearance of the various car factories in not raising the price of cars. No reason except their desire to play fair with the buying public has kept them from raising the prices on their vehicles to the prices they command in the used car market.

## Government Interference Will Again Jeopardize Growth of Sound Economy

Slowly but surely price structures distorted by the O.P.A. are coming into balance and seeking their natural levels. Some prices are moving up, many are moving down. Out of this free play of economic forces the country will find a solid basis for an era of plenty.

A year ago tires were scarce and car owners were paying premium prices for them. Since then, production has caught up with demand and now tire prices are being cut.

The same sequence will occur in the automobile field and the legislation which is being demanded, in many quarters will be obsolete before the ink is dry on the official signatures.

Undoubtedly the present situation in the car field where current model cars of low mileage are selling at 25 to 33 per cent higher than list, is very much to be deplored. But unbalanced conditions always have come into being and will always occur when an economy is distorted by man-made legislation or by extreme scarcity. We had it in the twenties when passage of the prohibition amendment resulted in the thirsty public paying \$10 a bottle for so-called Scotch, and millions of dollars were diverted into the hands of the bootlegger. During the war, passage of the O.P.A. brought about a similar situation. Today cars are scarce, and many individuals who want new cars will keep raising the ante until their needs are fulfilled.

Passing laws will not stop cars from increasing in price. Neither

will laws prevent the public from offering more money for a car, nor the dealer from getting all that he can. During the war the O.P.A. placed a ceiling on cars, and many dealers and purchasers circumvented the Act by various means or ignored it completely. Neither Federal laws nor State legislation will change the situation that exists in the car field today.

In the final analysis it is not the seller who sets prices but the purchaser, and the public in its desire for new cars is bidding up prices.

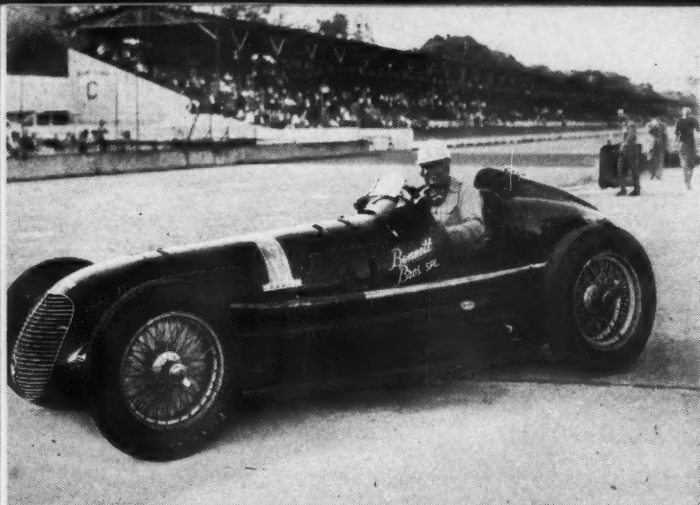
The present state of affairs is unfortunate, but it exists and all dealers and the N.A.D.A. also should be the first to recognize the reality of the situation.

## Weekly Production of Cars and Trucks in U. S. and Canada\*

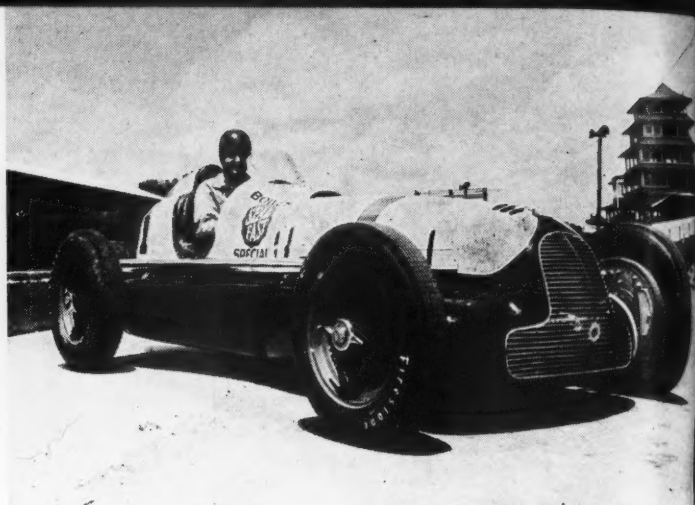
Week Ending	1947	Corresponding Week in 1941
Jan. 4.....	53,437	76,690
11.....	64,828	115,935
18.....	75,166	124,025
25.....	94,345	121,948
Feb. 1.....	94,114	124,400
8.....	89,958	127,675
15.....	97,276	127,510
22.....	103,400	127,740
29.....	104,802	126,550
Mar. 1.....	105,175	126,550
8.....	104,048	125,915
15.....	105,496	131,410
22.....	108,472	123,805
29.....	100,261	124,165
Apr. 5.....	97,385	116,255
12.....	97,893	99,260
19.....	105,337	99,945
26.....	102,447	108,165
May 3.....	101,690	130,610
10.....	94,756	132,380
17.....	83,201	127,255
24.....	96,651	133,560
31.....	77,843	106,395
Total.....	2,052,206	2,631,593

\*Compiled by Ward's Automotive Reports

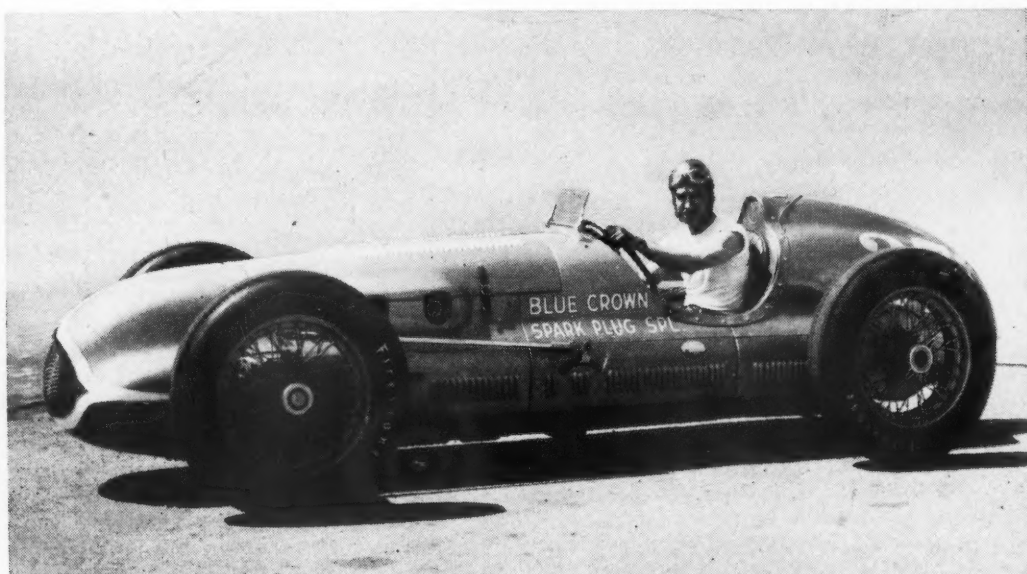




Ted Horne in the Bennett Bros. Special finished in third position with an average speed of 114.799 mph.



Rex Mays, a favorite with the crowd, drove his Bowes Seal Fast Special at 111.056 mph to place sixth.



Mauri Rose drove one of the Blue Crown Specials to first place, averaging 116.338 mph. Bill Holland in an identical car led for many laps and slowed into second place in the last few laps on orders from his pit.

## Mauri Rose Wins at

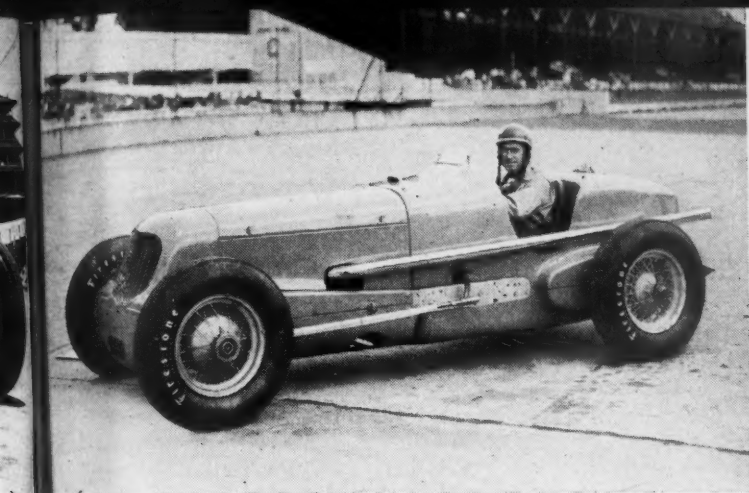
**M**AURI ROSE won the 1947 Indianapolis Race at an average speed of 116.338 m.p.h. in a Blue Crown Spark Plug Special. Rose's win climaxed a contest featured by the consistent and capable performance of both Blue Crown cars built and entered by Lou Moore. Bill Holland, in the other Blue Crown, finished second, after having led the race for well over a hundred laps. Both of these cars, designed and built in the United States beat the best that Europe could offer.

Ted Horn, in the Bennett Bros. Special, finished

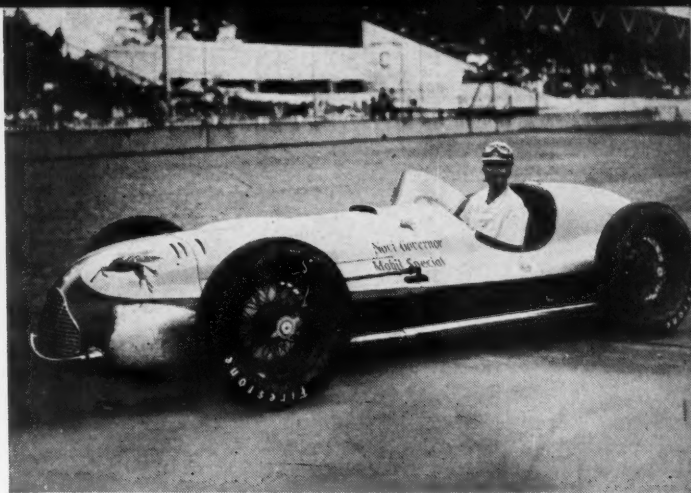
third. Cliff Bergere was fourth in the Novi Governor Mobil Special started by Herb Ardinger. Jimmy Jackson placed his Jim Hussey Special in fifth spot. Rex Mays was sixth in his Bowes Seal Fast Special. Other cars to finish are listed on page 62.

The race was marred by the fatal crash of veteran Shorty Cantlon, whose Auto Shippers Special spun into the wall on the southwest turn on its 40th lap. Cantlon apparently had swerved to avoid Bill Holland's car as the latter spun ahead of him when entering the

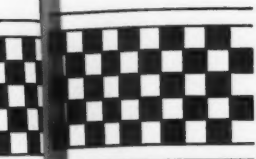
*(Continued on page 62)*



Shorty Cantlon, a veteran of many years' standing, crashed in the Auto Shippers Special on the 40th lap and later died of the injuries he suffered then.

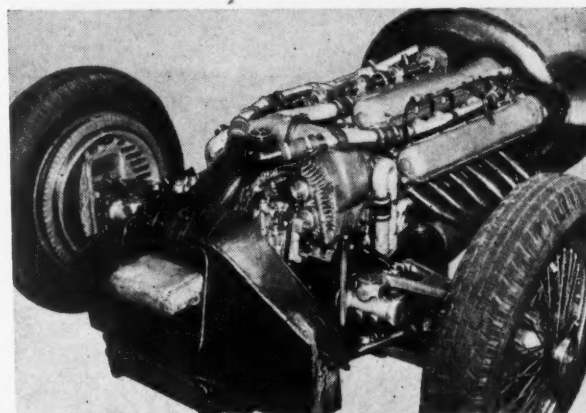
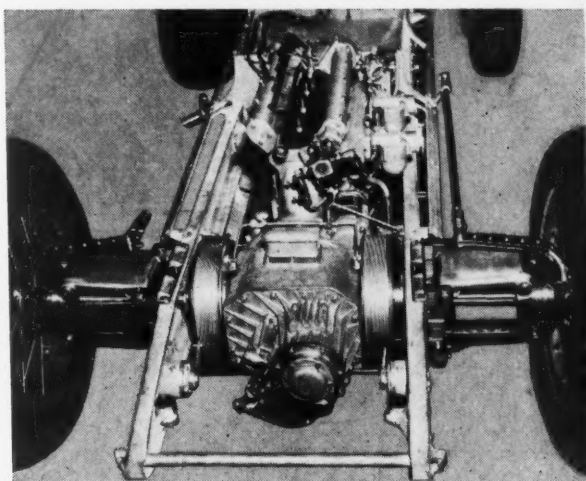


Governor special, then shifted to the one driven by his team-mate Ardinger and ended up in fourth place. Below is a close-up of the Novi front end.



by **ROBERT J. JACKSON**  
The Perfect Circle Co.

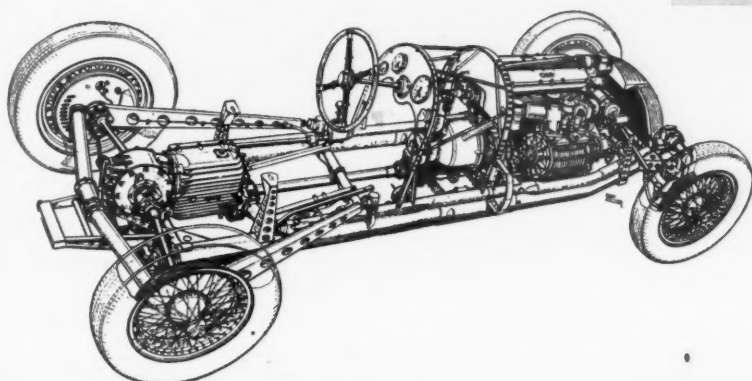
Lou Moore's two entries proved far superior to anything at the track, finishing in one two order and also turning in the fastest qualifying trial of 128.755



Above. The engine of Don Lee's powerful Mercedes attracted considerable interest among the mechanics and engineers present.

Left. H. L. Brooke's little E.R.A., weighing only 1450 pounds was the smallest entry and was expected to give a good account of itself, but engine trouble kept it out.

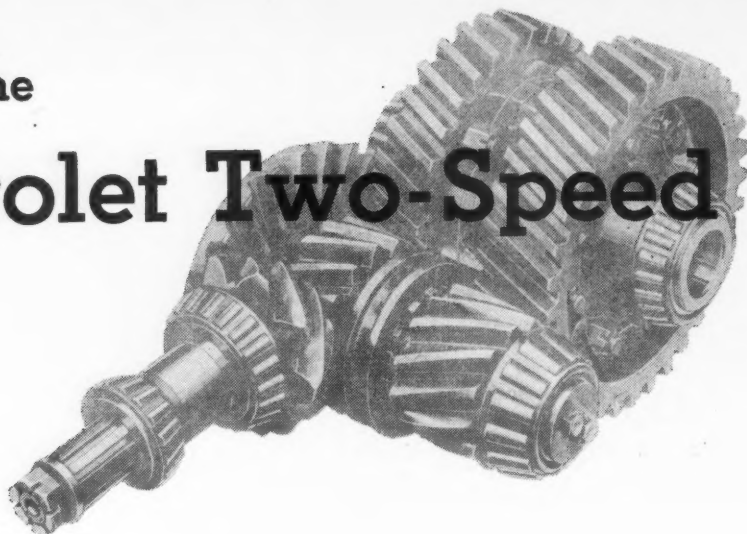
# at Indianapolis



governor  
Jimmy  
ch spot.  
Special.

veteran  
al spun  
0th lap.  
Holland's  
ring the

# Servicing the Chevrolet Two-Speed Axle



**Disassembling and assembling the vacuum-shifted unit now used on the two-ton heavy duty trucks**

by **RICHARD L. REDDY**

**M** AINTENANCE of the new hypoid two-speed rear axle unit as used on the Chevrolet two-ton heavy duty truck, is relatively simple and does not require any equipment that is not in the better equipped shops.

Service procedure in accordance with factory instructions follows:

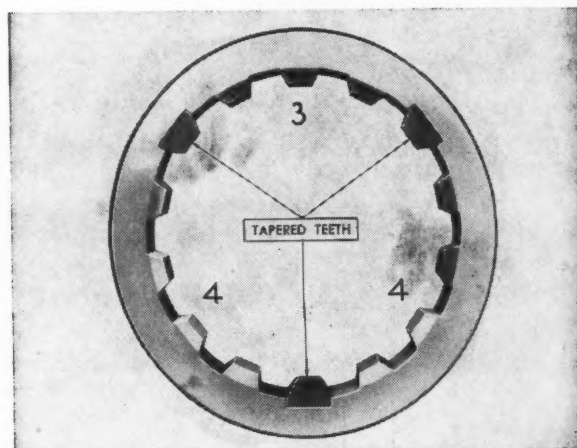
To remove the differential carrier it is first necessary to release the axle shaft flange bolt lock plate lugs with a chisel and remove the bolts and lock plates. The axle shafts can then be pulled out of the housing about 8 in. to clear the differential. (It may be necessary to use cap screws in the tapped holes in the axle flanges to start the shafts.)

The lubricant is drained from the differential, the inspection plate is removed, and the vacuum cylinder hoses are disconnected. The rear universal joint is split by removing the trunnion bearing "U" bolts from the rear flange, the propeller shaft assembly is slid forward, the bearings are taped to the trunnion and the shaft is swung to one side and tied to the frame side rail.

The cap screws attaching the carrier to the axle housing are removed and a long drift punch inserted through the topmost hole to support the carrier. The carrier is then supported with a roller jack and worked forward until it clears the housing and can be rolled from under the truck.

The differential bearing caps and carrier are center-punched for identification when reassembling.

The adjusting nut locks and differential bearing cap retaining nut tie wires are removed and the nuts,



Shifter sleeve. Poppets and springs must be caught while the sleeve is being removed.

bearing caps and differential assembly are removed from the carrier. The pinion cage to carrier nuts and the lubrication plug are removed. The cage assembly is then pulled by installing two  $\frac{3}{8}$  in. standard bolts in the tapped holes in the cage flange. The cage to carrier gasket and shims are removed. Note the number and thickness of the shims for future reference.

The vacuum shift units are removed and the shifter fork is removed from the inside of the carrier. The nuts and lockwashers are removed from the double reduction shaft bearings caps, and the caps, shims and gaskets are taken off. Check the number and thickness of the shims for future reference. Two  $\frac{3}{8}$



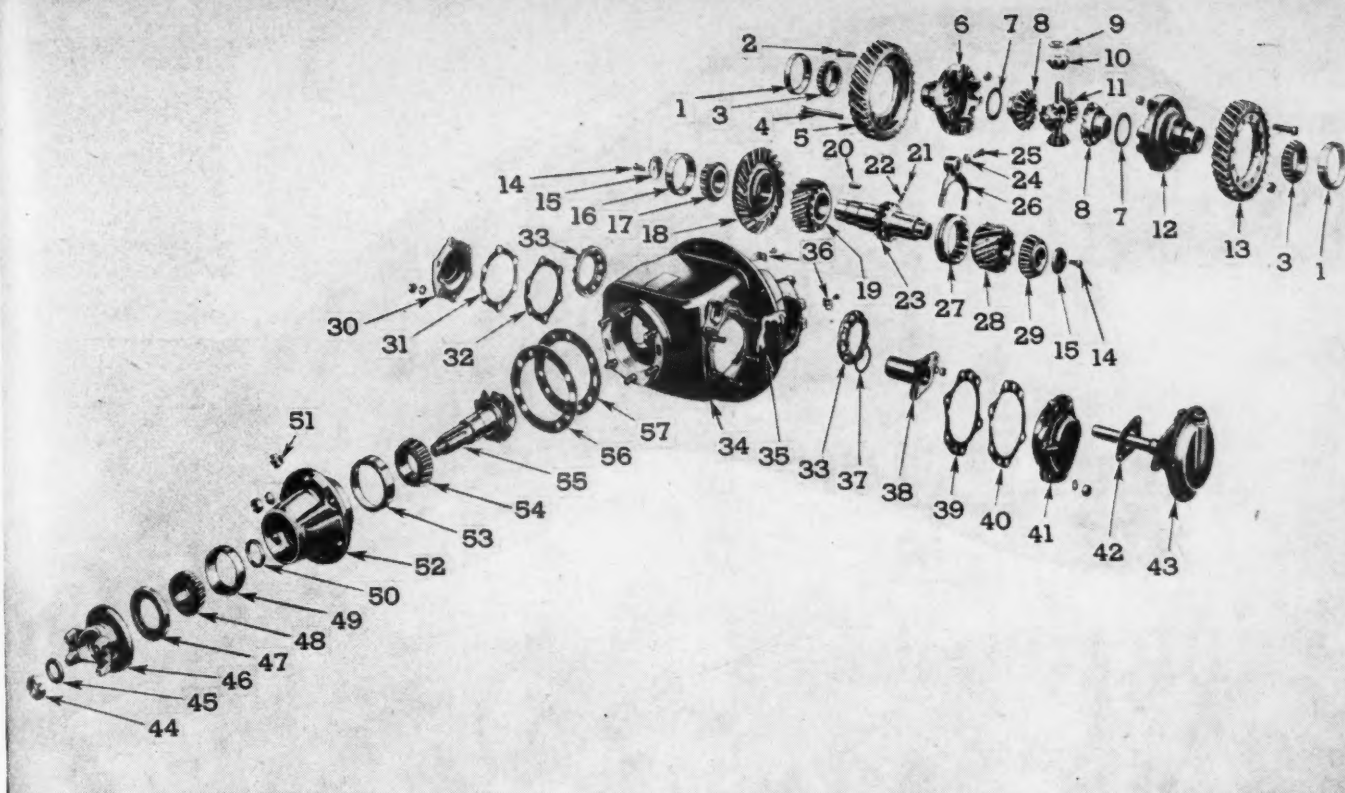


Fig. 7—Exploded View of Two-Speed Differential Carrier Assembly

- |   |   |  |                                       |
|---|---|--|---------------------------------------|
| 1. Bearing Cup, differential side             | 14. Cap Screw, reduction shaft bearing retainer | 29. Bearing, reduction shaft left              | 42. Gasket, vacuum shift flange       |
| 2. Bolt, double reduction gear to case        | 15. Washer, reduction shaft bearing retainer    | 30. Bearing Cap, double reduction shaft right  | 43. Vacuum Cylinder and Piston Rod    |
| 3. Bearing, differential side                 | 16. Bearing Cup, reduction shaft right          | 31. Shim, double reduction bearing cap right   | 44. Nut, pinion shaft joint flange    |
| 4. Bolt, reduction gear and differential case | 17. Bearing, reduction shaft right              | 32. Gasket, double reduction bearing cap right | 45. Washer, pinion shaft joint flange |
| 5. Gear, low speed double reduction           | 18. Ring Gear                                   | 33. Adjusting Nut, differential bearing        | 46. Flange, universal joint           |
| 6. Differential Case Half                     | 19. Pinion, high speed double reduction         | 34. Carrier, differential                      | 47. Seal, pinion shaft oil            |
| 7. Thrust Washer, differential side gear      | 20. Key, ring gear to shaft                     | 35. Shim vacuum shift sleeve                   | 48. Bearing, pinion shaft front       |
| 8. Side Gear, differential                    | 21. Poppet, shifter sleeve                      | 36. Lock, differential bearing adjusting nut   | 49. Cup, pinion shaft front bearing   |
| 9. Thrust Washer, differential pinion         | 22. Spring, shifter sleeve poppet               | 37. Seal, vacuum shift sleeve                  | 50. Spacer, pinion shaft bearing      |
| 10. Pinion, differential                      | 23. Shaft, double reduction                     | 38. Sleeve, vacuum unit mounting               | 51. Plug, pinion cage lubrication     |
| 11. Spider, differential pinion               | 24. Nut, shifter fork bolt lock                 | 39. Gasket, double reduction shaft cap left    | 52. Pinion Cage                       |
| 12. Differential Case Half                    | 25. Bolt, shifter fork lock                     | 40. Shim, double reduction shaft cap left      | 53. Cup, pinion shaft rear bearing    |
| 13. Gear, high speed double reduction         | 26. Shifter Fork                                | 41. Cap, double reduction shaft left           | 54. Bearing, pinion shaft rear        |
|   | 27. Shifter Sleeve                              |  | 55. Pinion and shaft                  |
|   | 28. Pinion, low speed double reduction          |  | 56. Gasket, pinion cage to carrier    |
|   |   |  | 57. Shim, pinion cage to carrier      |

in. standard cap screws inserted in the tapped holes in the left bearing cap will assist in its removal.

Sliding the double reduction shaft assembly to the left in the carrier, and pulling the ring gear end toward the rear to clear the differential bearing support, will permit removal of the shaft assembly. The right bearing outer race can then be driven out of the carrier with a soft drift and hammer.

To overhaul the pinion cage, the pinion shaft universal joint flange is clamped in a heavy vise and the cotter pin, nut and washer and joint flange are removed. With the carrier end of the pinion cage properly supported, the pinion and rear bearing are pressed out of the cage. The bearing spacer is re-

moved from the pinion shaft, and the front bearing and oil seal are pressed out of the cage.

All parts are cleaned thoroughly, and inspected carefully for chips, cracks or wear. All damaged or worn parts, including the oil seal, should be replaced or repaired. If, for instance, the pinion or pinion rear bearing is found to be damaged or worn, the bearing can be pressed off the pinion shaft with a suitable bearing remover and an arbor press and the damaged part replaced. The pinion and ring gear, by the way, are serviced in matched sets. If the cage bearing outer races are found to be damaged they can be removed with a long drift and hammer. Pinion

(Continued on page 72)



## Rebuilt Motors build BIG Business

**This large repair shop also operates an  
assembly line producing 150 units per day**

**by KEN GUNDERMAN**

**T**HE Northern Motor Company of Escanaba, Mich., owned and operated by Herbert J. Norton, authorized Ford dealer, established a motor rebuilding department in 1939 on a very small scale as a supplement to the company's normal garage business. Today the motor rebuilding department has outgrown the parent company and is operating successfully in its own spacious quarters under a new firm name, the Northern Motor Rebuilders.

Ford Motor Company officials who attended the Northern Motor Rebuilders' "open house" in April, together with more than 100 Ford dealers of Upper Michigan and Northern Wisconsin, described the Escanaba plant as one of the most modern, completely equipped motor rebuilding factories in the United States.

When the company started its motor rebuilding service in 1939, using a small portion of the garage space at the Northern Motor Company, production was limited to two rebuilt motors per day. This was gradually increased to seven units per day, utilizing 25 per cent of the company's available floor space. At that time the company had much of its work jobbed out, in-



Northern Motors staff of experts has increased tremendously in size since the company first took on the job of rebuilding Ford engines. The interior view gives an idea of the length of the line and the well-lighted, neat plant in which the men work.

cluding crankshaft regrinding, reconditioning of connecting rods, rebabbiting of bearings, and so forth. All of this work is now performed by the company in its own plant.

The motor rebuilding service became a full fledged operation, entirely separate from its parent company in July, 1946, when the plant was moved to new quarters with 13,000 square feet of floor space and given its new name, the Northern Motor Rebuilders.

The firm employs 70 persons in the motor rebuilding factory. The Northern Motor Company, employing 60 persons, continues to flourish as a separate entity functioning as an authorized Ford agency and offering complete repair shop service.

Entirely new equipment was installed in the Northern Motor Rebuilders' new factory, a lengthy process that was completed only recently. Today the

*(Continued on page 86)*

# PROMOTION PROGRAMS

## from 8 Shops



How these shops get publicity may give  
you a good idea for a program of your own



**A** NUMBER of garages and automotive service shops prepare their own promotional activities which with infinite variations may be used by automotive service establishments in various sections of the country.

First of all, in Ft. Worth, Tex., the M & M Garage at 5015 E. Lancaster St., is at the moment presenting a tie-in with a number of local organizations such as the Elks, Kiwanas, D.A.R. and other social groups. Each week one of these groups prepares a floor display which is placed in the offices of the service establishment. A weekly display consists of photographs and material having to do with the current activities of the organization in question. Each week an entirely different interior display is planned and



executed which requires no time on the part of the garage but which attracts organization and club members to the garage each and every week. This service establishment is offering a monthly \$5 award to the club working out the most unusual display calculated to

insure safe driving by organization members. Such displays are also placed in the office of a garage for all interested visitors.

The M & M Garage also has another tie-in with local groups. It offers a series of \$1 cash awards to club members who present the best letter of not more than a hundred words containing a suggestion for safe driving. The purpose of these small awards is to arouse interest in safe driving by club members in general. It also promotes a steady stream of members to the garage.

The Dewey Garage at 1405 Commerce Ave., in Ft. Worth has a tie-in with a number of dry cleaning establishments throughout the community. Each dry cleaning establishment places a poster in its windows or on its premises pointing out that just as dry cleaning preserves the life of any garment cleaning also preserves the appearance and long life of any automo-

by **EUGENE A. CONKLIN**

bile. In return this garage, on the back of its receipt, issues a list of neighborhood dry cleaners which

offer reliable cleaning service.

The Hillside Garage at 1332 E. Rosedale St., in Ft. Worth offers a prize of \$2.50 for the best true experience of a road accident caused by too bright or too dim headlights. These experiences must be interesting and factual. The purpose is to secure sufficient material to use in newspaper advertising urging that car owners have their headlights checked.

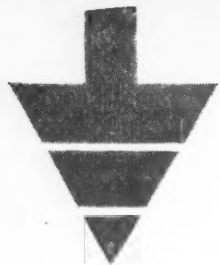
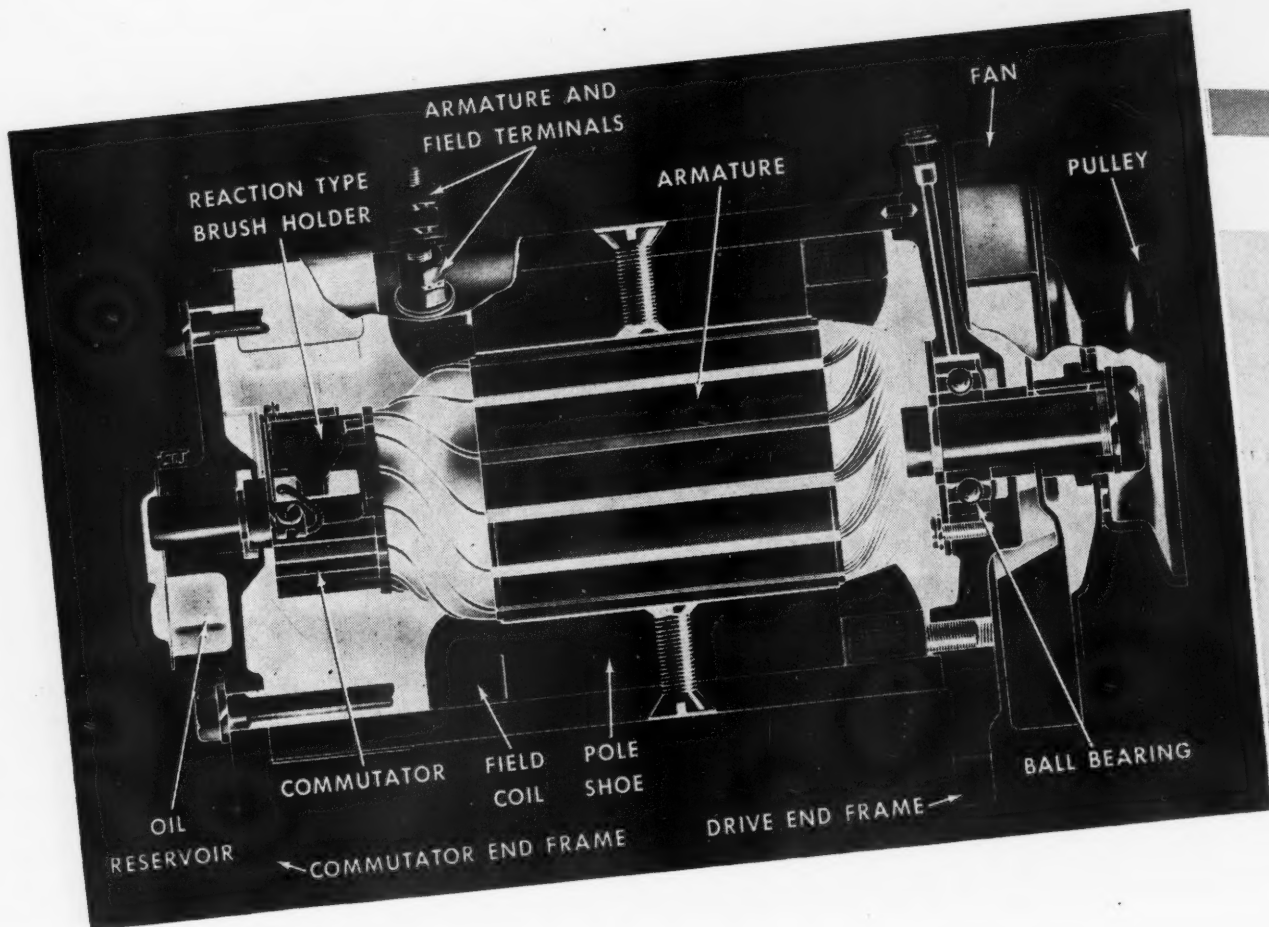
The Prather-Roy Garage at 3001 Maple St., Dallas, Tex., has a promotion tied up with matched brake lining. It urges every car owner to have a free examination of his brakes made at the garage between the first and fifth of every month. There is no charge made for this examination, but if brakes prove faulty, the required adjustment is made at the usual rates. While it unquestionably takes a few moments to make the brake examination in response to this offer, nevertheless the service staff has a chance to talk with car owners and to suggest other repairs which might be made.

The Philpot Garage at 928 Dale St., Dallas, Tex., each week offers a special rate to car owners from a certain neighborhood or residential district to come in and have their cars thoroughly checked and inspected. This courtesy neighborhood discount extends only for a given week after which residents from this area must pay a usual service rate. Since a different neighborhood is honored by this courtesy discount week in and week out every community car owner has a chance at some time during the calendar year to secure such a discount. In addition this garage sponsors a weekly radio program on which merchants from a given neighborhood are interviewed on human interest experiences which have occurred to them in the course of their business. Merchants who

(Continued on page 104)







# Adjusting Delco-Remy

Continuing his popular series of articles on the electrical system

**W**HEN your customer reports generator trouble, and your quick checks show that it is the generator which is at fault and not the regulator or the battery, your next step is to check the generator itself to see just what must be done to restore the generator to good operating condition. The generator-regulator quick-check procedure has already been covered in a previous issue of *MOTOR AGE*. Let us see what the procedure is for checking the generator in detail.

If the generator will produce little or no output, the trouble could be due to a loose drive belt, a dirty or gummy commutator, worn or sticking brushes, poor internal connections, opens, grounds, or shorts inside the generator.

First, make sure that the drive belt is not so loose or worn that it is slipping and preventing the gen-

erator from being driven at normal speed. Then remove the coverband from the generator so you can check it for thrown solder and inspect the commutator and brushes.

When a line of solder is found on the coverband (Fig. 2), it indicates that the generator has overheated as a result of overloading so that the solder in the connections at the commutator riser bars has melted and been thrown out. This causes poor connections between the commutator bars and the armature windings which, in turn, will cause arcing and burning of the bars. Continued operation under this condition will soon cause the bars to burn so badly that the armature will be completely ruined. However, if the bars are not too badly burned, the armature can be repaired. First, the connections should be carefully resoldered (with resin, not acid,

generator from being driven at normal speed. Then remove the coverband from the generator so you can check it for thrown solder and inspect the commutator and brushes.

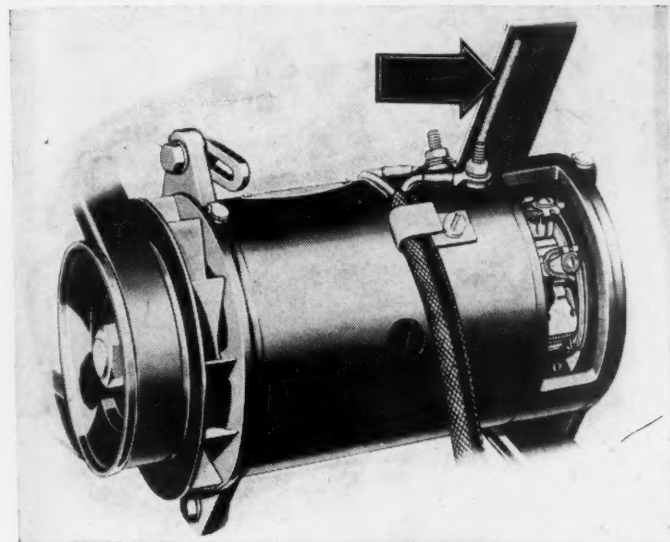


Fig. 1—Left. Sectional view of a typical passenger car generator.

Fig. 2—Above. Thrown solder on the generator coverband indicates that the generator has overheated as a result of having been overloaded.

# Generators

the author discusses the generator

flux). Then the armature can be put in a lathe and the commutator turned down (Fig. 3). Finally, the mica between the commutator bars should be undercut  $1/16$  inch. This undercutting operation should be done very carefully to make sure that all mica is removed, along with any cuttings or copper dust. The commutator should then be sanded lightly with No. 00 sandpaper to remove any slight burrs that might have been raised on the commutator bar edges by the undercutting job.

To prevent further overloading of the generator, the regulator settings (or third-brush position on third-brush generators) must be checked and corrected so output is brought down to specifications.

If solder has not been thrown, examine the brushes to make sure that they are seating properly on the commutator with the correct spring tension. Brushes

(Continued on page 94)

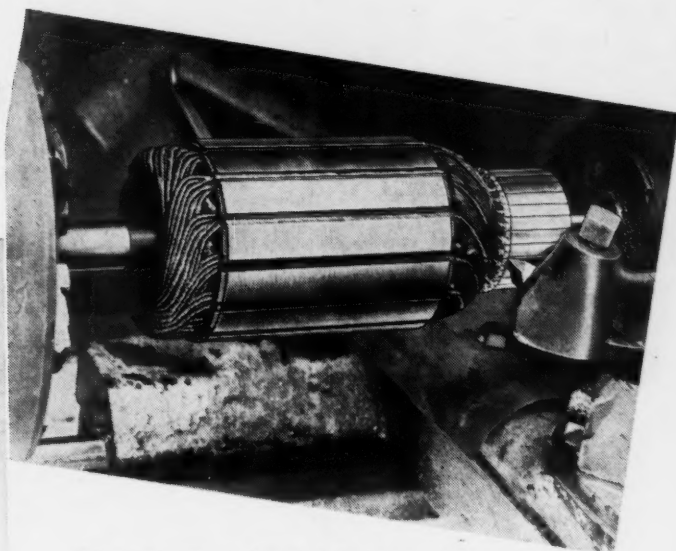


Fig. 3. Armature set up in lathe preparatory to turning the commutator.

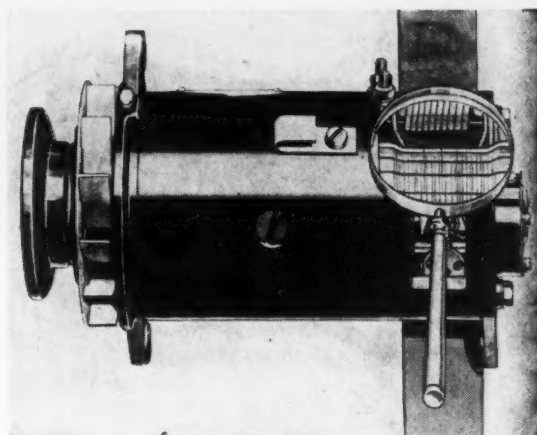
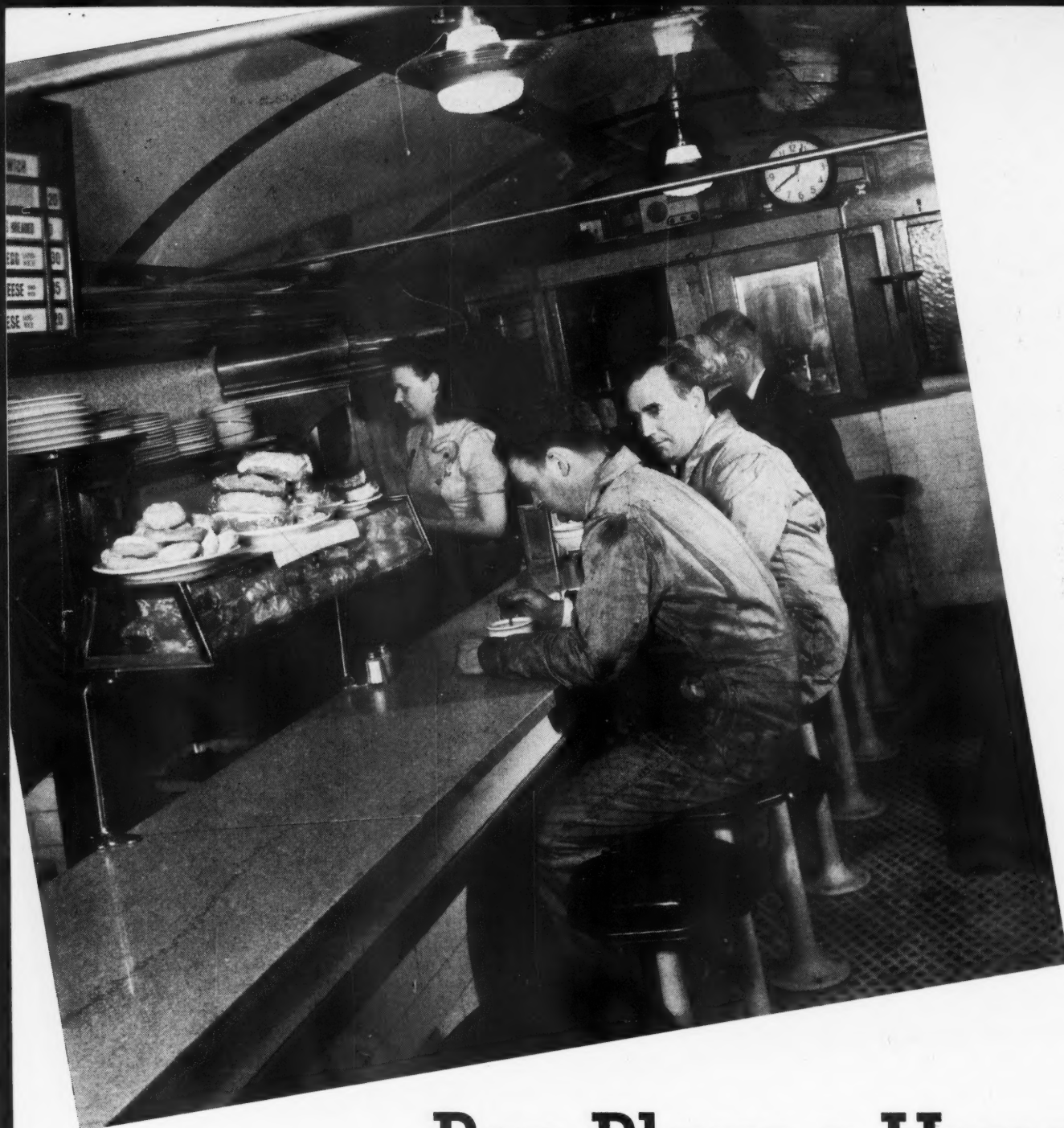


Fig. 4. Inspection of the commutator should be made to see if commutator is worn, dirty, out-of-round, or has high mica.



Fig. 5. Using a pole shoe screw driver and pole shoe spreader.



## Pop Plays a Hunch

"Do you know what he had the nerve to do this morning?" asked Larry. "Comes out in the shop with the classified ad page and says, 'See this ad for the Peppo Service Station? They're looking for a mechanic.'"

**L**ARRY TATE looked at his watch. "Well," he said to Tommy Winters, "it's about time we put on the feedbag.

"And am I glad!" said Tommy. "I'm half starved."

"Me, too. This has been the longest morning I ever put in. Let's get goin'."

He had taken exactly three steps when Pop O'Neill appeared in the open door of the shop office. "Larry! Tommy!" he called. "Come in here a minute."

Larry mumbled something under his breath, but

both he and Tommy started for the office. When they entered, Pop was leaning over the desk, reading an instruction book. Then, seeing Larry and Tommy, he looked up, and leaned back in the swivel chair.

"What's cookin'?" asked Larry, peevishly.

"I don't know exactly," answered Pop. A travelin' salesman brought in an old Dodge coupe a while ago and wanted it fixed up."

Larry snorted. "So what?" he said. "It's lunch time."

"So we got a tough job," said Pop, ignoring the sarcasm. "We never had a car in here with exactly this kind of trouble."





**MOTOR AGE**  
**BASIC COURSE FOR**  
**MECHANICAL TRAINING**

**Pop gives the boys a shot at finding the trouble on this job, but the old master has the real answer after all in the 63rd article of the popular Motor Age series**

**by J. EDWARD FORD**

# on Hard Starting

"Get to the point, Pop," said Larry. "We're late." Pop propped his elbows on the arms of the chair and put the tips of his outspread fingers together.

"It's like this," he said. "You've been makin' cracks about my trouble shootin'. So I'm gonna give you a chance."

"Well, thanks," said Larry out of the side of his mouth. "It ain't often high honors are heaped on me."

"We'll see about the honors when you lick this job."

Larry looked at him sharply. "You mean it's got you up a tree?" he asked.

"As a matter of fact," said Pop. "I haven't even had a chance to think about it."

"Then what were you thumbin' through that shop manual for?" demanded Larry.

Pop smiled. "If you'd use those eyes of yours for something besides watchin' out for me," he said, "you'd see this is a Buick manual."

"Oh," said Larry.

"How's this Dodge acting?" asked Tommy.

"Like it was on its last legs," said Pop.

"That's practically a blueprint," said Larry. "We'll fix it right up."

Pop looked up with a withering glance but Larry was consulting his watch.

"This Dodge looks like it's a chronic case," said Pop. "The owner's from Harrisburg. He says he had a carbon-and-valve job done on it right before he started on his trip. But ever since the car's been actin' up."

"Such as how?" asked Larry.

"Such as bein' hard to start," answered Pop. "The engine takes hold after you spin it a while and runs a couple of seconds and then dies."

"But how did it ever get away out here?" asked Tommy.

"Oh it manages to run after a bit," said Pop. "But it ain't got no pep, the owner says. And it spits back through the carburetor."

"That's a cinch," said Larry. "The head gasket's shot."

"Well, it could be" admitted Pop, "except the owner had a new head gasket put in the last place he took it, and it didn't help none."

Larry looked at Pop suspiciously. "And you ain't got no idea what the trouble is?" he asked.

"None at all."

Tommy stepped back from the desk. "We'll find out what it is," he said.

"What do you mean 'we'?" asked Larry. "If there's any

diagnosin' to be done around here, it's me that'll have to do it."

"We'll see about that as soon as I get back," said Pop.

"So you're runnin' out on the job," said Larry.

"No. I happen to have an engagement. I offered to drive the missus over to see her sister."

"You mean your wife told you to take her," scoffed Larry.

"My boy," said Pop, rising, "a married man who talks like you do is headed for trouble. When he lets a woman marry him, he's gotta act just like a poli-

*(Continued on page 110)*

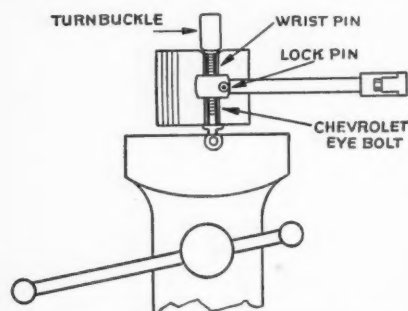
# We Pay 5 Bucks For SHOP

Surer than the races, steadier than hitting the jackpot. The faster you write 'em, the richer you get. We need 'em bad if they're good. So grab your pencil and spike yourself a fin. Send along your idea—write it or draw it, anyway that we can understand it—some short cut to make a job easier or faster, some special tool you can't buy, some kink of your own. Of course, we won't accept any printed by any other publication.

## Studebaker Lock Pins

The wrist pins in the Studebaker Champion are hard to remove because of the difficulty in getting the lock pin out.

Our solution has been to take the eye bolt from the rear outside brake adjustment of a 1929 Chevrolet. This slips through the opening in the wrist pin. The eye end



is then locked in a vise and the turnbuckle is screwed down on the other end until the wrist pin is clamped securely. The rod can then

be rocked until the lock pin comes free and can be removed.—L. P. Ingwersen, Wyoming, Iowa.

## Useful Spring Tool Made from Old Dip Sticks

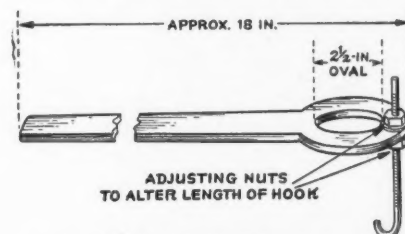
Our shop, like many others, is currently replacing many Dodge, DeSoto and Plymouth motors. We have discovered that if we save the dip sticks from the old motors they make excellent spring tools.

It is only necessary to cut off the tapered point at the lower end of the stick and cut a fairly deep notch immediately above the cutting point. In operation, you reach over the motor cross member with the tool and hook it on the clutch spring. The pedal clearance can then be adjusted and the spring easily rehooked. The tool fits the hand perfectly.—Percy A. Muirhead, College Place, Wash.

## Valve Spring Compressor

We have devised a handy valve spring compressor for use on valve-in-head engines.

It is made of a piece of strong  $\frac{3}{8}$  in. steel, approximately 17 in. long, with a  $2\frac{1}{2}$  in. oval hole cut in the end for keeper removal. A small hole is drilled in the outer



edge and a threaded hook inserted, with two nuts to permit adjustment for different valves. In operation, the rocker arms are removed, the tool is placed over the valve, and the hook engaged under the spring.—J. L. D., Vic's Super Service, Bowie, Arizona.

## Removing Oil Pan On 1937 DeSoto

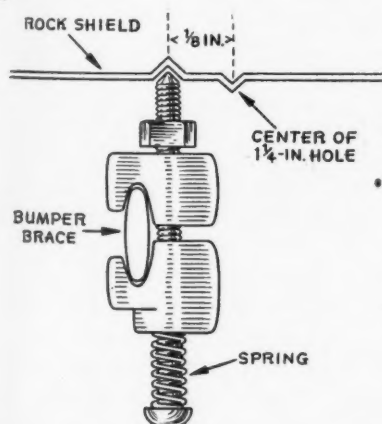
I have found from past experience that the easiest and quickest way to remove the oil pan on the 1937 DeSoto is to drill two  $\frac{3}{4}$  in. holes in the bottom of the chassis cross member directly in line with the front pan bolts. This allows your speed wrench to go straight up through to the bolts.—Clarence Thwing, Brentlinger & Miller Garage, Fordland, Mo.

# KINKS

## Installing Chrysler Fog Lamp Brackets

It is quite a trick to drill Chrysler rock shields in the right spot to mount the fog lights. We have found the following system very satisfactory:

Sharpen the end of the bolt on one of the brackets like a center punch. Place a spring, about 1¼ in. long around the head of the bolt. Then assemble the clamps on the bolt, upside down, with the nut on the top, near the shield. Tighten until the point is pressed tight against the shield, and tap the shield with a soft hammer un-



til the bolt has put a dent in the metal.

Center punch the shield 1/8 in. from the dent to allow for the shape of the bracket and drill a 1¼ in. hole.—*Lenort H. Lowen, 60 Hope Ave., Rudley, Cal.*

## Trouble-Shooting Dodge Carburetor Noise

This isn't exactly a shop kink, but it has helped us in trouble-shooting a hard-to-trace noise.

Fast deceleration in the early 1946 Dodge Fluid Drive may produce a sound like a loose wheel or play in the rear end. It may even sound like the U-joint or transmission, and can't be located. We have found that removing the dash pot link spring on the carburetor and increasing the tension usually clears up this odd noise.—*George J. Trentz, 231 Water Street, Platteville, Wis.*

## Boosting Battery Charge

On the 1946 and 1947 Chrysler products, I find that on cars equipped with extra accessories, such as radios, heaters, and so forth, it is difficult to keep the battery charged up, especially when the car is in taxi service or is driven much at night.

By removing the factory generator pulley on these cars and installing Auto-Lite pulley No. SP1323, which is exactly the same except for a smaller diameter, I have overcome this trouble. The effect of this change is to step up the charging rate at lower speeds and it does no harm to the battery or generator as the voltage regulator still controls the charge.—*Alfred E. Clapper, 72 DuPont Avenue, Newburgh, N. Y.*

## Handy Pouring Spout

I have found it easy to keep paint cans clean and free of paint in the sealing groove and down the sides by making a special pouring lid. I solder a piece of light tubing, about 1¼ in. in diameter, off center near the edge of an old lid. In use, this spout lid is put on the can in place of the original lid and it is possible to pour the paint without dripping or spilling.—*Jim Ladely, Box 515, Sitka, Alaska.*

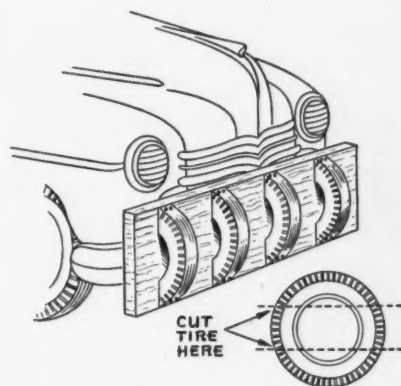
## Replacing Water Pumps On 1937 Pontiac

Since 1937 Pontiac water pumps are so hard to find, I have worked out a way to replace them with '40, '41 or '42 pumps.

I first remove the fan belt, blades, pulley and water pump. I then take the late model pump and a pulley from a late Dodge or Plymouth and enlarge the holes with a 3/8-in. bit. In this way the pump and fan can be reassembled so as to become a perfect fit in the '37 Pontiac. We have found this trick very successful.—*Harold K. Hunt, 606 Cantrell St., Irvine, Ky.*

## Wrecker Bumper Cushions

Pieces of old tires, cut in the manner shown, and fastened to the wooden service car bumper, make effective cushions that absorb shock and protect the chrome finish on cars that are being pushed. Large spikes or nuts and bolts can be



used to fasten the tire sections in place. It is sufficient to fasten the ends.—*Will Stoll, 251 Columbia Ave., Elmhurst, Ill.*





**Commercial line includes panel delivery  
and trucks with two or four wheel drive**



The panel delivery truck shown above comes with two-wheel drive only, but otherwise is very similar to the jeep. The truck pictured below is available in several body styles.

# WILLYS

## Announces New Truck

**T**WO new commercial vehicles, a Jeep Panel Delivery and a Jeep Truck, have been introduced by Willys-Overland Motors. Both models are built around the basic Jeep engine. Prices are to be announced later.

The Panel Delivery is a development of the Jeep Station Wagon, which vehicle it strongly resembles. Designed to carry a 1050-lb. payload with a gross vehicle weight of 3875 lb., its wheelbase is 104 in., its overhaul length 174 13/16 in.

Front suspension is of the independent planar type,

while the rear is sprung by semi-elliptics, airplane-type shocks being standard all-around. Brakes are 10 by 3/4 in. self-centering hydraulics. Tires are 6.50 by 15.

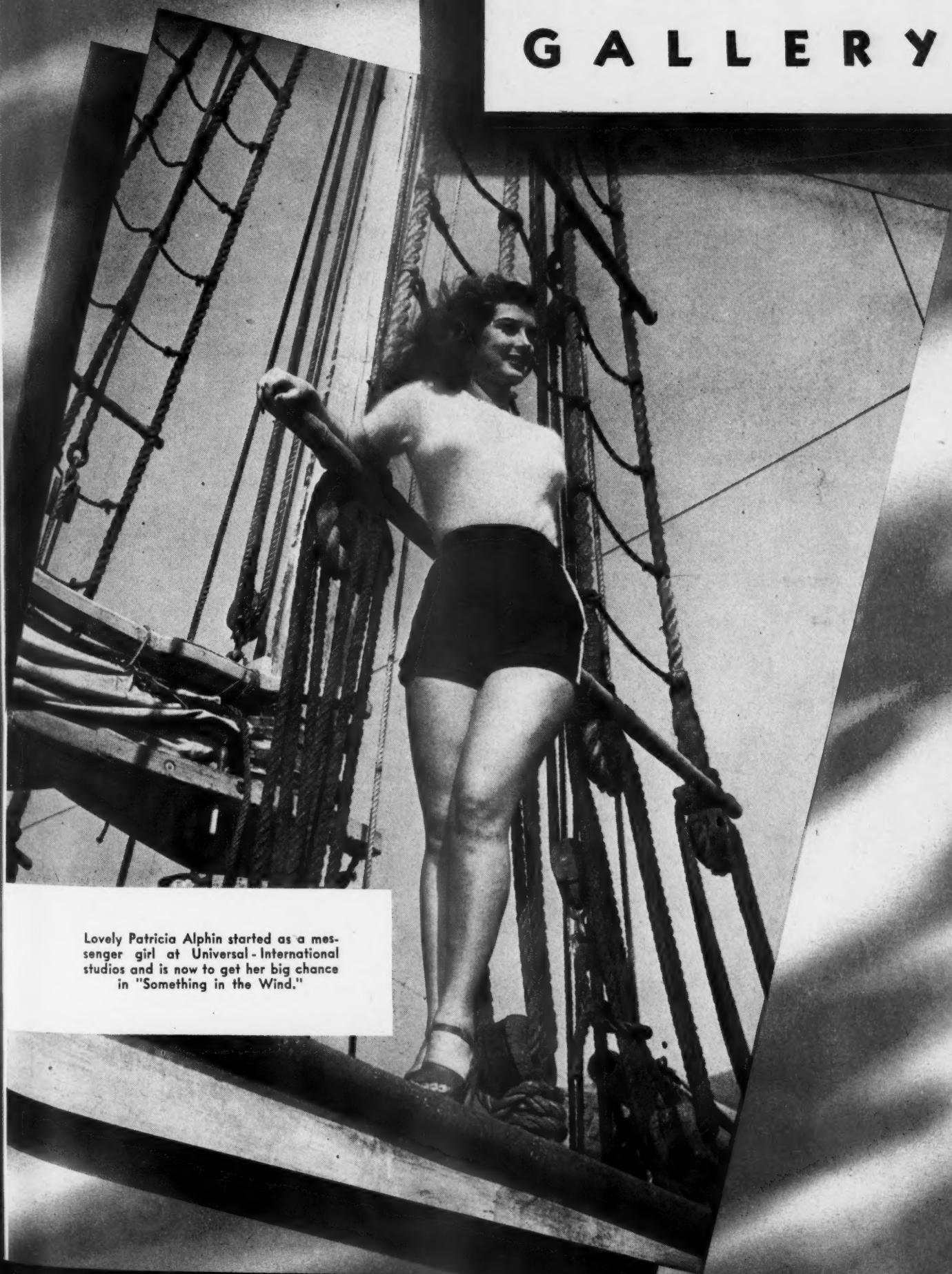
Due to modified carburetion and changes in the intake manifold, the engine powering the Delivery develops 63 brake horsepower, three more than the standard Jeep engine that powers the Truck.

The Jeep Truck, with a gross vehicle weight of from 4700 to 5300 lb. and a 3/4 to 1-ton payload, is available as chassis, chassis and cab, pick-up or stake.

The conventional front end is of the reverse Elliot type, made by Clark Equipment, and mounted on 36 1/4 in. semi-elliptics. The rear axle is a semi-floating, heavy-

*(Continued on page 116)*

# MOTOR AGE PICTURE GALLERY



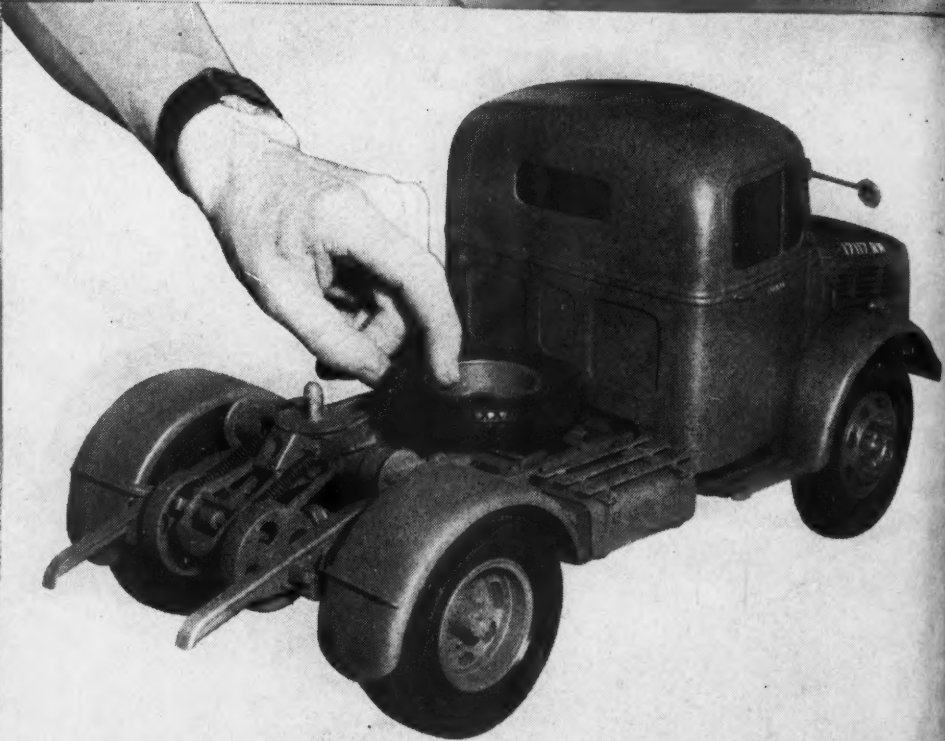
Lovely Patricia Alphin started as a messenger girl at Universal-International studios and is now to get her big chance in "Something in the Wind."



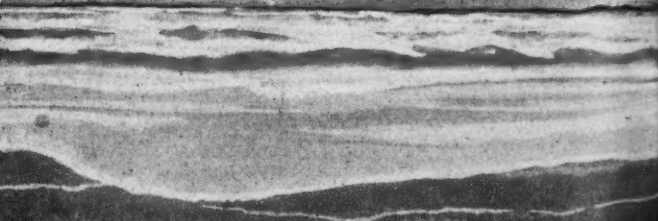


▼ Mrs. Martha Napier Bryant, Queen of the famed Mule Day Festival at Columbia, Tenn., crowns "Queenie" as ruler over the festival.

Not only is model making big business but big business often makes models. George Sherman is placing a scale model truck in position on a production line made for planning purposes. In the foreground ▼ are some of the offices.



▲ British motor car salesmen travelling abroad are taking accurate scale models of the latest British cars. These models give buyers an idea of British goods. The photo shows a Vauxhall-Bedford semi-trailer made by Messrs. Basset-Lowke's at Northampton.





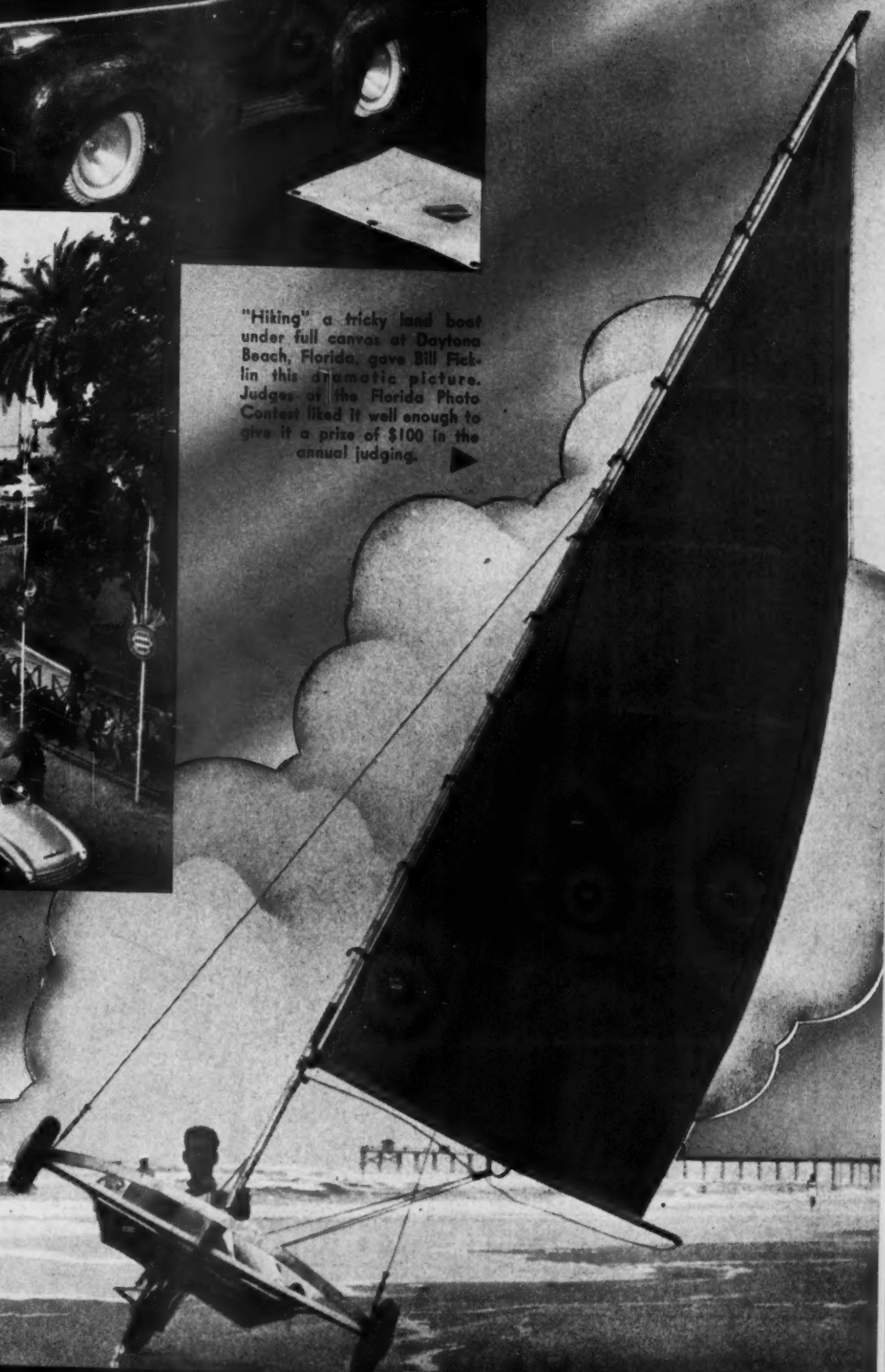


▲ Pneumatic rubber fenders are the answer of Dr. Claus B. Strauch to one problem of motorists. The fenders are inflated with air.



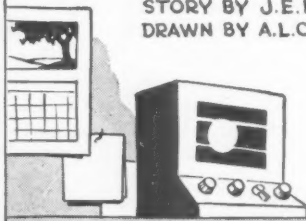
▲ A view of the Monte Carlo Concours d'Elegance led by a Grand Prix Alfa Romeo. A Cadillac owned by Mr. G. Halassy won the highest award for elegance and comfort. The building in the background is the famous Casino where people try to break the bank.

"Hiking" a tricky land boat under full canvas at Daytona Beach, Florida, gave Bill Ficklin this dramatic picture. Judges of the Florida Photo Contest liked it well enough to give it a prize of \$100 in the annual judging. ▶



# FRANK THE FIXER

STORY BY J.E.FORD  
DRAWN BY A.L.CASSEL



WELL, THERE SHE IS, FOLKS... THE ONLY TWO-WAY IN ANY SHOP IN TOWN

HOW DO YOU KNOW IT WILL WORK?



I'LL TAKE THE TOW CAR ALL THE WAY DOWN TO THE SOUTH SIDE, AND WE'LL TEST IT OUT

I'LL RUN HOME AND GET A COUPLE OF RECORDS TO PLAY FOR YOU

NIX. THIS IS STRICTLY BUSINESS



FRANK'S GONE. LET'S SEE WHAT ELSE YOU CAN GET ON THIS SET?

SEE IF YOU CAN TUNE IN A FRANKIE RECORD

I'D RATHER HEAR POLICE CALLS.



OKAY, LISTEN!

CALLING CAR FORTY-NINE. GO TO TENTH AND WEST INVESTIGATE FAMILY ROW. CORRECTION. INVESTIGATE HUSBAND NURSING BRUISES ON CURB



MR. BROWN WANTS TO KNOW IF HIS CAR IS READY

TELL HIM WE CAN'T GET PARTS FOR HER THEN WE'LL HAVE TO FIGURE OUT WHAT TO DO WITH HER.



SHE'S A TOUGH BABY, ISN'T SHE?

I'LL SAY SHE IS! I'M AFRAID WE'RE GOING TO HAVE TO GIVE HER THE WORKS. YOU BETTER START TAKING HER APART.



THAT MODEL AIN'T MUCH TO LOOK AT ANY MORE. SHE AIN'T GOT MUCH SPARK LEFT. BETTER LOOK AT HER RODS

WITH THE KIND OF PAN SHE'S GOT, I GUESS WE'LL HAVE TO JERK HER HEAD OFF.



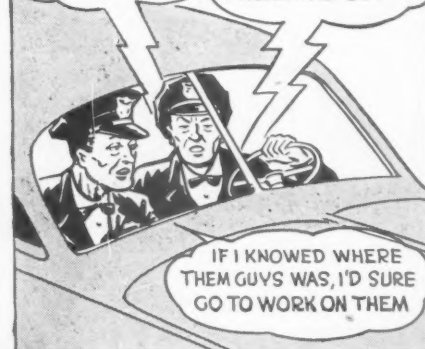
SO WHAT? SHE'S STALLED ONCE TOO OFTEN

I KNOW. I HAD TO CHOKE HER WHEN SHE CAME IN.



I'LL TURN HER OVER A COUPLE OF TIMES FIRST

IF SHE MAKES ANY NOISE, WE'LL HAVE TO TEAR HER REAR END OUT



IF I KNEW WHERE THEM GUYS WAS, I'D SURE GO TO WORK ON THEM

WHAT ABOUT CALLING FRANK?

OH, I FORGOT! THIS IS FRANK AND WHITEY'S CALLING FRANK. CALLING FRANK.

WHAT'S ALL THOSE SIRENS BLOWING FOR OUTSIDE?



WHERE ARE THEY? THEY'RE TAKING A DAME APART

I DON'T KNOW ANYTHING ABOUT A DAME. BUT AS SOON AS YOU CLEAR OUT, THERE'S A COUPLE OF GUYS I'M GOING TO TAKE APART.







Wid's Auto Supply in Windsor, Ontario, emphasizes neat and attractive display of merchandise both in the windows and on the tables and display shelves.



## Wid's of Windsor Wins with Cash Rebates

**W**ID's of Windsor, Ontario, have developed a merchandising plan that after six months of operation is proving an excellent sales-getter. Briefly, the plan consists of giving customers a 3 per cent cash rebate on their purchases after a customer has bought a total of \$50 worth of merchandise. Every product sold in the store is included in the rebate plan, and the management reports that on items like oil, tires and other repeat numbers the idea is particularly effective.

When the plan was first thought of, it was felt that a 3 per cent rebate in the form of merchandise might be a valuable idea, but later it was decided to give the customers cash instead, and this practice has worked out extremely well. In order for customers

**This Canadian retail automotive supply store has found a rebate system that draws customers and keeps them coming back . . . by RONALD J. COOKE**

to participate, they keep their sales slips. The girl on the cash register reminds them about the rebate, and sales slips also carry data on the plan.

"The main thing to the success of a plan of this type," said Dave Mandel, owner of Wid's, "is that the store put plenty of enthusiasm back of the idea. We sell a few gift items, toys, and small appliances, and we found that the plan was ideal in that it brought the wives of many of our male customers into the store. Customers also ask friends to save them their sales slips."

*(Continued on page 91)*





# CLEARING HOUSE

## FOR SERVICEMEN'S QUERIES

Bill Toboldt, Editor, Motor Age

### Hudson Oil Pump Drive Gear Trouble

Recently we had a 1937 Terraplane 71 come into our shop with the oil pump gear on the camshaft torn off. We replaced the camshaft and installed a new oil pump, cleaned the oil lines and oil pan, checked cam bearings. They seemed O.K. but this shaft only went about five days and back it came with the gear gone the same as the first one. We checked with the Hudson service to see if they could give any reason for this. They said there must be dirt clogging somewhere and building up a pressure to stop the pump.

We removed the motor this time and flushed the motor out and cleaned all the oil passages and

and cleaned the oil by-pass. Checked oil pump gear for proper clearance and alignment. We ran the car for several hours and everything was O.K. Customer took it again and the next day was back—gear gone again.

Each time we checked the pump right away and it was free so you could turn it with your fingers perfectly easy. Please help us if you can as this has got us stumped and we lost a good customer besides.

We have another Hudson '38 Eight with the same thing wrong and are afraid to do this job until we find a reason for these gears going the way they do. We have checked with several mechanics and they don't seem to be able to give any reason either.—Russell H. Coe, 3058 Eaton Rapids Rd., Lansing 15, Mich.

I AM very much interested in the trouble you are experiencing with a Hudson and certainly hope that I can help you. I agree with the Hudson agency in that the trouble is probably caused by clogged oil line which builds up pressure so as to stop up the action of the pump.

Evidently you have done a thorough job in cleaning out the motor and oil lines and I was wondering if possibly the trouble might not be caused by water getting in the pump and freezing. It would, of course, have the same effect as dirt clogging the system. The water might result from condensation, it

might also be caused by a defective head gasket or warped cylinder head, permitting water to leak down past the pistons into the oil pan.

I would also suggest you check the mesh of the oil pump drive gear with a camshaft. I would do this with Prussian Blue in the same way you check the mesh of the rear axle and ring gear.

I trust these suggestions will be of assistance.

### Chevrolet Clutch Trouble

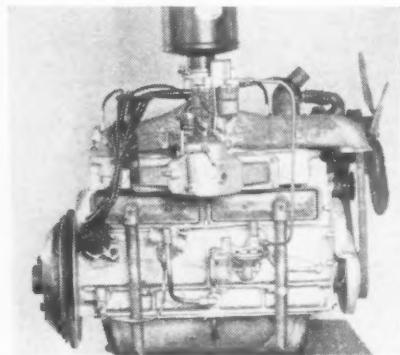
I have a 1½ ton Chevrolet truck that growls when I shift gears so you cannot get it in gear only by means of putting in gear and then start motor.

I put in a new clutch plate, also a new pressure plate assembly and I still have the same trouble.

I removed clutch again and checked clutch slide on shaft, also using graphite powder. Put in a new throwout arm, also throwout bearing but still have the same trouble.

Will you please tell me what I can do?—Ed Wiederhold, Wiederhold & Maddox, P. O. Box 31, Deanville, Texas.

THE shifting trouble you are having on a Chevrolet 1½-ton truck might be remedied by removing the flywheel underpan and then with the clutch pedal depressed with a pedal jack, check the pressure plate and make sure it is releasing the



pulled a wire with a rag on the end through all the lines, took the pump apart and checked it. We installed new cam bearings, thrust washers

clutch disk. If it doesn't release I would make a careful inspection of the motor mountings and clutch linkage for wear. Sometimes the replacement clutch disk is a little thicker than the original and if this is the case, clutch cover should be shimmed out by removing cover to flywheel bolts and placing a thin flat washer under each. Also check the pilot and the mainshaft pocket bearings.

When installing transmission, use guide pins as any weight of the transmission on the clutch hub will distort it and cause the above trouble.

### Rebuilt '37 Plymouth With Strong Oil Smell

*I have a 1937 Plymouth on which I have rebuilt the engine completely, rebore, valves, pistons, pins, rings, all bearings. I had the engine out, so I cleaned it until it was spotless. It runs very good, no skip whatsoever, compression is perfect according to specifications; in fact, everything seems to be tip-top except for one thing. There is a smell of oil smoke while driving. I have installed an oil filler breather tube that extends to the bottom of the floor boards but I still seem to get that smell. I haven't asked any of my mechanic customers, thinking that maybe you could help me solve this trouble.*

*I have heard mechanics mention that some of their jobs had the same trouble and they didn't have a remedy other than sealing all holes inside the car. I believe there should be a remedy. I haven't touched the car since I did the job on it because it was too cold.*

*I have heard say it's blow-by, but blow-by can be heard if the oil cap filler is removed and silenced with the palm of the hand. I don't seem to have any noises outside a couple of slightly loose tappets.*

*I would appreciate any help you can give me on this problem. Incidentally, this car does not burn oil.*  
—Jerry Sparago, 15 Stevens St., New Haven, Conn.

**O**N your 1937 Plymouth I am a little at a loss to point out definitely what the trouble might be because it certainly sounds like a case of blow-by, but on the other hand, you have just rebored this

job and installed new pistons and rings. I am wondering if there is any possibility that the pistons were given too much clearance. There is also a strong possibility that the rings have not as yet been worn in and that your trouble will be overcome after a few thousand miles of driving. For instance, I have known of many cars that would give less than 500 miles per quart for 3000 miles, then the oil mileage would go up to 1000 miles per quart.

A spark that is advanced too far will sometimes contribute to the effect of blow-by, but I think most likely you will find that either the rings have not as yet become seated or that the pistons were given too much clearance.

You spoke of cleaning the engine very thoroughly, and I wonder if you cleaned the crankcase breather, because if this is clogged it will tend to increase any tendency toward the smell you describe.

### Toboldt Admits He's Stumped Can Anyone Help Him?

Even Bill Toboldt can't make a hood, hood side panels, and the radiator shell for a 1939 Studebaker Commander, but he needs them badly. If you can help him out please write immediately.

### Studebaker Overdrive Slips In and Out of Gear

*We have a Studebaker that disengages in the overdrive. When it does this it will engage again when the clutch is released. Then it will go along for a little way and the same thing happens again. Can you tell me what part of it is at fault?—Oscar G. Lee, 323 W. Jefferson St., South Bend, Ind.*

**A**FTER carefully studying your problem I would suggest you drain and flush the overdrive and transmission and then refill with the proper grade of lubricant. If the trouble still persists, thoroughly check and tighten the wire terminals at the relay throttle control switch and at the solenoid.

If the car has considerable mileage, the trouble might be caused by the free wheeling rollers being  
(Continued on page 132)

**BUTCH . . . . .**



## Teetor Reports on 1947 ASI Show, World's Largest Trade Exhibition

Organization of the 1947 Automotive Service Industries Show, Dec. 8-13 at Chicago's Navy Pier, is well underway, according to an announcement made public recently by Don H. Teetor, vice-president of the Perfect Circle Corporation and chairman of this year's Joint Operating Committee. Preliminary surveys indicate that because of its central location and the vast amount of space made available through release of Chicago's Navy Pier, this year's show will completely eclipse 1946 attendance and exhibitor records established at the Atlantic City ASI Show, reported to have been the world's largest industrial trade show.

Initial working committees set up under jurisdiction of the Joint

Operating Committee were announced recently by Teetor. Hal Miller, Chicago Auto Parts Company, has been named chairman of the Credentials Committee and will be assisted by F. G. Stewart, Standard Automotive Supply Company; R. D. Black, Black & Decker Mfg. Co.; F. S. Roberts, Phelps-Roberts Corporation; C. P. Brewster, K-D Mfg. Company, and B. G. Close, King Quality Products Company. At the same time news of other committees was released.

The Finance Committee will be headed up by J. M. Spangler, National Carbon Company, and will be assisted by Hal Miller, Chicago Auto Parts, and N. F. Kaplan, Pennsylvania Rubber and Supply

(Continued on page 133)

## Packard President Raises Car Prices on All Models

Expressing "sincere regret" that the Packard Motor Car Company cannot reduce prices or even "hold the line," George T. Christopher, president and general manager, announced today that price increases ranging from \$75 to \$224 are now in effect on all current models of Sixes and Eights. For the new prices on each model see Motor Age "Price, Weight and Body Table" on page 66.

Christopher's announcement came closely on the heels of the company's first-quarter report showing a consolidated net loss of \$1,148,172 and the news that the sheet steel shortage had again shut down Packard's final-assembly and other operations.

"Desire and ability to reduce prices are, of course, two totally different things," Christopher pointed out. "Packard certainly has had the desire, but would have lost at least \$2,000,000 additionally on 1947 models alone in an attempt even to 'hold the line' under the old price schedule."

He said the price increases "give consideration to wage increases sought by the UAW-CIO, as well as to rises in material costs which the company has been unable to absorb, with production restricted so sharply."

On April 23, Christopher had expressed doubt at a Detroit press conference that the company could "get enough production this year to give a 15-cent-an-hour wage increase in hourly wages without affecting prices."

He pointed out today that Packard's final assembly line was idle 28 out of 63 working days in the first

(Continued on page 132)

When Chester L. Reed couldn't find a show-room for his dealer agency in Pittsburgh, he leased an unused waiting-room in North Side station. Cleaning and redecorating gave Reed a 4,000 square foot display room in the busiest section of the city.





JUNE, 1947

a b c d

## ASPAR Drivers and the Indianapolis Speedway

The strike of the American Society of Professional Racing gained considerable newspaper space for the Indianapolis Speedway but apparently had no great effect on the race itself. The person who suffered most by the strike was the president of the striking association, Ralph Hepburn, who lost a possible chance to pilot the Novi Governor which he drove so brilliantly last year.

The apparent base for the strike was that the Association wanted money for qualifying heats, on the grounds that the Speedway made money from admission tickets to them, and that the Speedway management should offer \$150,000 prize money and give "definite assurance" that it would offer this amount. Wilbur Shaw replied that the Speedway would give as large a purse as the traffic would bear. That was his stand, and he stuck to it.

The Association failed to reach any agreement with the Speedway management before the deadline for entries went by, which left Hepburn with the entries of 29 owners in his pocket.

When the deadline had passed, the Association had to alter its demands to include a clause to the effect that ASPAR drivers would be permitted to qualify on the same terms as non-striking drivers. Shaw replied that if all the entrants who had fulfilled requirements would sign a waiver, the ASPAR men would be permitted to fill any vacancies left by the original entrants. Prize money had in the meantime been put up for qualifiers and had been taken in

(Continued on page 148)

## MEMA Survey of Wholesalers' Statements Proves Healthy Condition of Aftermarket

The MEMA Jobber Survey for the years 1945-46 indicates a basically healthy condition for the after-market industry.

Substantial changes from a year ago were expected and the survey confirms them. Sales are up 49 per cent, inventories jumped 53 per cent. Price increases would account for part of the rise. Payables show an increase of 65 per cent.

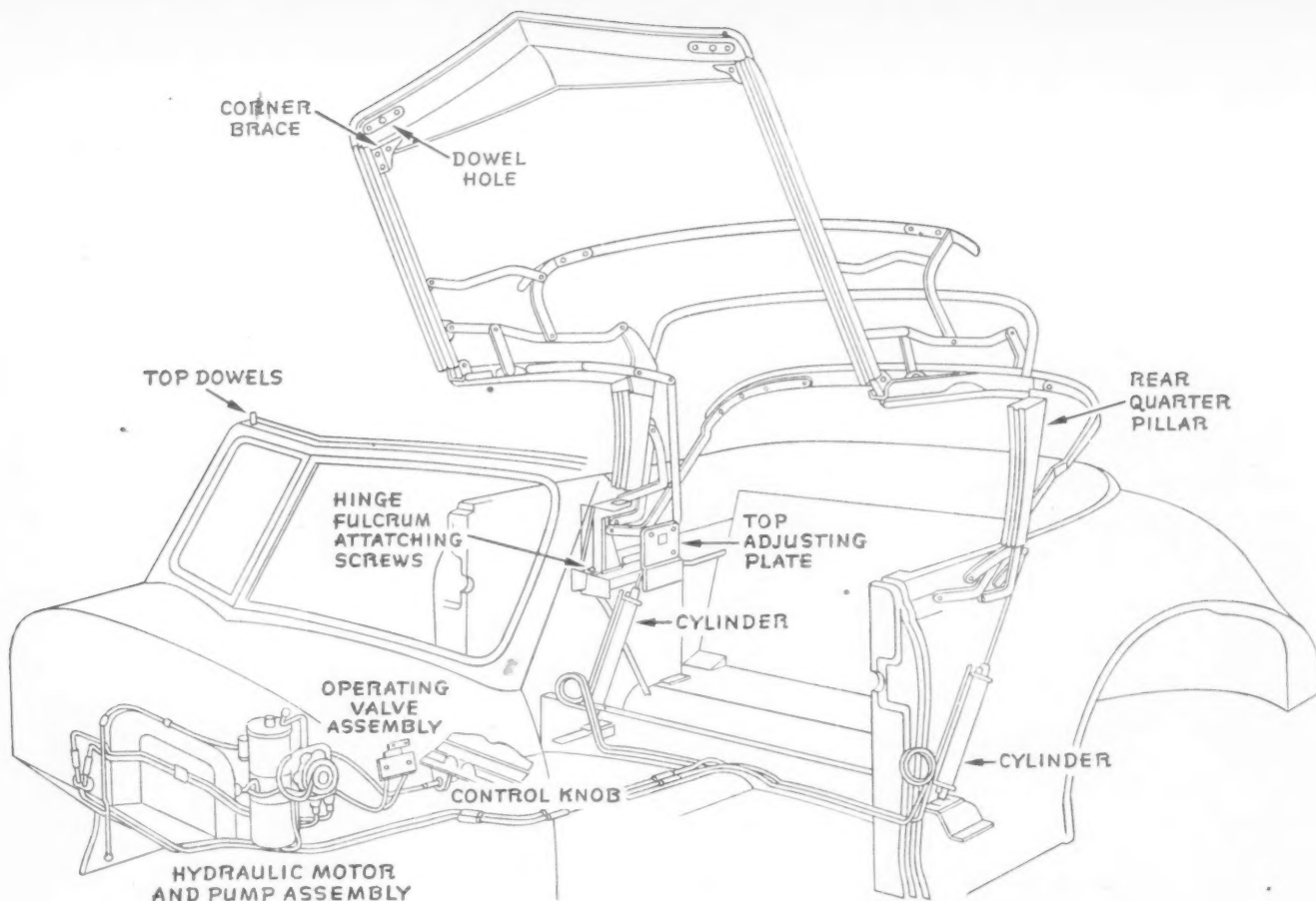
The gross profit figure remained at exactly 28.4 per cent. The net profit percentage gained over last year, indicating that higher ex-

penses were offset by the greater volume handled, resulting in a better net return. Stock turnover was off slightly suggesting that the impact of overstocks and unbalances may not have registered to any great extent on this particular group or that it will reflect in the 1947 survey.

The net profit figure cannot be taken as a true index since reports of this item are not submitted on a uniform basis. It is affected by before and after taxes and withdrawals.

### COMPOSITE STATEMENT OF 387 AUTOMOTIVE JOBBERS (Averaged)

	ASSETS		Increase or Decrease Over 1945
	12/31/45	12/31/46	
Cash .....	\$ 17,138	\$ 17,109	— \$ 29
Receivables .....	17,888	26,358	+ 8,470
Inventory .....	35,338	53,919	+ 18,581
Current Assets .....	\$ 70,364	\$ 97,386	+ \$ 27,022
Fixed Assets .....	20,836	25,207	+ 4,371
Total .....	\$ 91,200	\$122,593	+ \$ 31,393
LIABILITIES			
Current Liabilities .....	\$ 22,283	\$ 36,741	+ \$ 14,458
Long Term Indebtedness .....	3,789	4,084	+ 295
Net Worth .....	65,128	81,768	+ 16,640
Total .....	\$ 91,200	\$122,593	+ \$ 31,393
Working Capital .....	\$ 48,081	\$ 60,645	+ \$ 12,564
TRADING OPERATIONS			
Sales .....	\$218,779	\$325,496	+ \$106,717
Cost of Sales .....	156,439	232,888	+ 76,449
Gross Profit .....	62,340	92,608	+ 30,268
Net Profit .....	10,206	17,166	+ 6,960
Current Ratio .....	3.1	2.6	
Increase in Sales volume over 1945 .....		48.6%	
Gross Profit on Sales .....	28.4%	28.4%	
Net Profit on Sales .....	4.6%	5.2%	
Inventory Turnover .....	4.4 times	4.3 times	
Collection Period .....	30 days	30 days	
Net Profit on Net Worth .....		26.3%	
Increase in Net Worth over 1945 .....		25.5%	
Ratio of Net Worth to Total Indebtedness .....	2.5	2.0	



An exposed view of the Hydro-Lectric top as applied to a Chevrolet, showing the hydraulic motor, pump, and tubing that connects to the actuating cylinders.

# Hydro-Lectric Top Maintenance



**After you read this article power tops will  
be as easy to service as they are to operate**

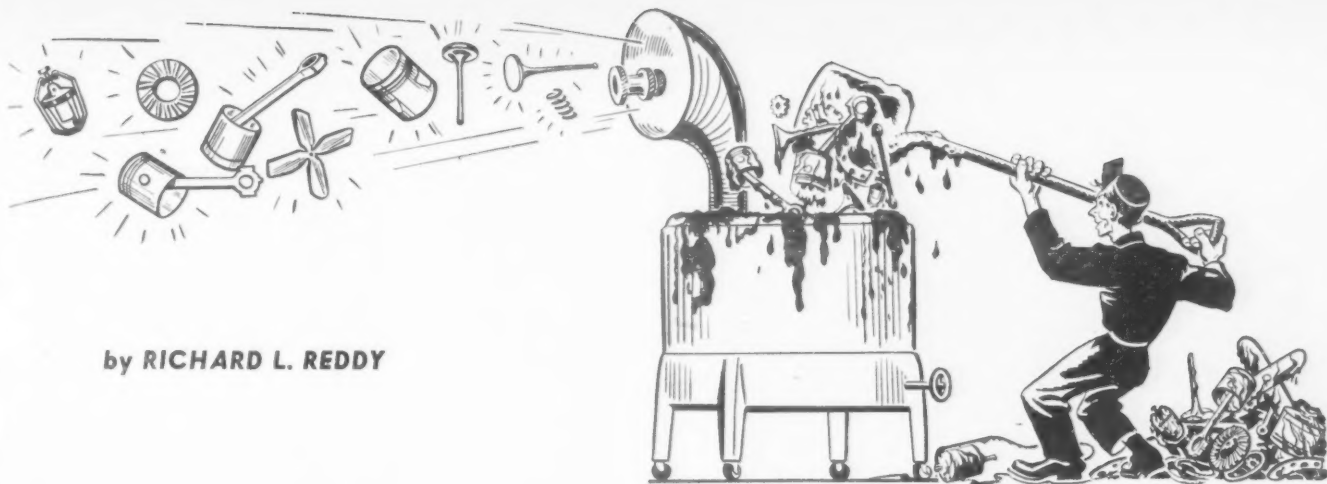
**T**HE substitution of power for hand operation is a growing tendency in car design. In addition to the now commonplace operations of windshield wiping, engine starting and gear changing, the raising and lowering of convertible tops has become standard practice on many makes.

The system employed by Fisher Bodies to raise

and lower convertible tops on General Motors cars is called the Hydro-Lectric, and it is fundamentally the same for all 1946-47 convertibles.

On all GM models the operation of a push-pull control knob located on the instrument panel selects the port openings of an operating valve assembly and energizes a solenoid-operated switch on the hydraulic motor. This operates the hydraulic motor, which pumps fluid under pressure through the operating valve then via metallic tubes to a pair of double-acting lift cylinders equipped with pistons that raise and

*(Continued on page 120)*



by RICHARD L. REDDY

## Clean Parts for Quick Service

**It's the shop that skips modern parts cleaning  
methods that soon gets taken to the cleaners**

**T**RYING to examine or repair cars without first cleaning the parts thoroughly is like getting your hair cut with your hat on. The job will be incomplete. For, in the absence of adequate cleaning facilities and methods, it is difficult to distinguish between a dirty, greasy, carbonized part . . . and something knocked off the underside of a fender.

The mechanic's first introduction to dirt is usually the first time he looks underneath or raises the hood. Cars on which the bright work gleams and the paint shines, more often than not show engine and chassis to be black and gooey as the inside of an old tar barrel. This topsoil must be removed before any inspection can be made.

Yet, it is only in recent years that the cleaning problem has been tackled scientifically, and industry has begun to produce the equipment and chemicals that now make rapid and thorough cleaning possible. Before we review the cleaning equipment field, however, let's consider the reasons for careful cleaning prior to getting to work on repairs.

Thorough examination of a part suspected to be worn cannot be made until the part emerges from its cocoon of grease, grit and carbon. The early birds in the repair game used the "dry cleaning" system of inspection cleaning . . . wiping the suspected part with an old piece of waste or even a piece of newspaper. This shifted a little of the upper layer of muck and smoothed down the undercoat of grease and carbon. Flaws, pits and cracks, as often as not, went undiscovered until the parts were reinstalled and the part or assembly broke or fell off. That made the flaw easy to find, but it didn't make for easy work or satisfied customers.

But the end of the motor buggy days saw the beginning of an age of closer tolerances and precision finished parts. Mechanics inspecting parts began to use newfangled gadgets like vee blocks and mikes. On a dirty, grimy surface, however, a micrometer would have to be used like a drill even to reach the metal underneath. No wonder it took time to convince the

shop hands that precision instruments were worth while.

Soon the "dry cleaning" method gave way to the bucket-and-brush system. The shop kept an old bucket full of gas or kerosene and a paint brush (completely submerged) somewhere under the bench. If the mechanic cleaning a part got to use this before somebody threw a lighted butt into it, he dunked the dirty part therein, fished out the brush, and went to work. He sloshed off as much of the goo as possible with the brush, which was never quite the right size or shape, and chopped off or scraped off the carbonized oil that lay underneath. Small openings he attacked with a toothbrush if there were one around. Otherwise he let it go. All of this process, of course, was subject to sudden revision if a spark got in among the gas vapors. When that happened the part was cleaned off all right. So was the payroll.

The bucket-and-brush method at least made it possible to get at least a rough idea of what you were working on. But up and coming garage men were beginning to look beyond that point. What happens, they began to wonder, to clean, new or rebuilt internal moving parts, such as bearings, gears, etc., that are assembled in dirty, gritty housings? It didn't take

*(Continued on page 103)*

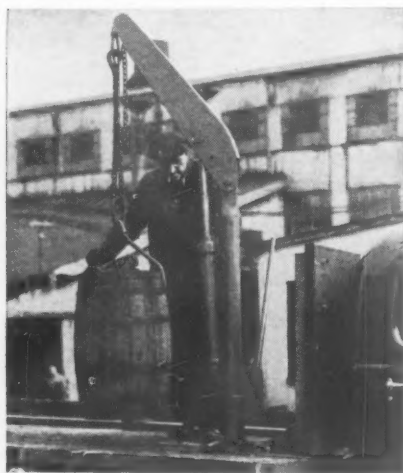


# MPI PRODUCTS



## Ruger Hydraulic Truck Crane

The Ruger 1-ton Hydraulic Truck Crane is a modification of the standard Ruger 1-ton floor crane and incorporates the same combination of hydraulic piston



and cantilever boom. It also incorporates the same two lifting and lowering controls, a hydraulic hand pump for raising the load and a control valve for lowering. While the crane is fully rotatable in its mounting socket, a foot brake is provided to prevent rotation or swinging under load. The adjustable support member, to prevent deflection of truck springs, is a part of the crane and can be swung up and fastened out of the way when the truck is in motion.

## Flock-Finishing Booklet

Behr-Manning, of Troy, New York, manufacturer of cut-to-length rayon flock, have released a new 10-page booklet on flock and flock finishing.

Containing 24 color sample

swatches in addition to its text matter, this booklet describes the adhesives, methods of applying adhesives and flock on various surfaces, outlines the company's engineering service, and lists decorative and functional uses for flock.

Behr-Manning flock, described in the booklet, is a product of the company's Electro-Textile Division, and is a precision cut-to-length rayon material applicable to a prepared surface with spray gun or beater bar, giving a dense, cloth-like surface. The booklet is available by writing to Behr-Manning.

## Abrasives Bulletins

The Clover Manufacturing Co., of Norwalk, Conn., has published a new series of bulletins, by E. B. Gallaher, on the use of industrial abrasives. One of these, "Coated Abrasives," gives a comprehensive picture of the coated abrasive industry and considers basic problems of manufacture and use. It is written fundamentally for the use of salesmen and purchasers who desire a general view of the abrasives field. Other bulletins in the series deal with coolants for abrasive belts, belt sanding of metal, testing coated abrasives, polishing lathes, the effect of moisture on the work value of glue-bonded coated abrasives and the use of abrasive disc sanders.

## Benwood-Linze Charger

The Benwood-Linze Company, 1815 Locust St., St. Louis 3, Mo., has announced a new fast charger, known as the B-L Supercharger, Model 300. According to the manu-

facturer, this charger, which incorporates the "Hydro-Thermatic Method" enables the operator to read the actual period of fast-charge required in minutes and automatically provides correction in minutes for battery temperature at start of charge. They also state that it establishes proper charging rate, after-charge test for battery condition, safe maximum battery capacity, maximum specific gravity at end of charge and final battery temperature within safe limits. The price is \$219.50.

## Coillite Trouble Light

The Roberk Company of Norwalk, Conn., announces a trouble light that can also be used as a danger signal on the road. It is fitted with a lighter plug and twelve feet of cord.

The Coillite is equipped with a red plastic lens that fits over the regular lens when it is desired to



use the lamp as an emergency signal or tail light. It can be hung or stood at any angle by means of the mounting incorporated in its design. Equipped with a 15 candle power bulb, the unit is three inches high, three inches in diameter and the wire winds around the lamp itself. The list price is \$3.25.

## Pedrick Truck-Bus Manual

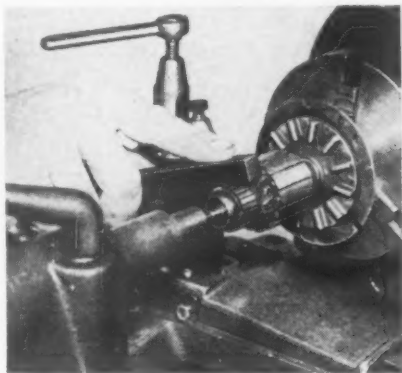
A new 108-page engine repair manual, devoted entirely to heavy-duty engines for trucks and buses, is announced by the Wilkening Manufacturing Co., of Philadelphia and Toronto, makers of Pedrick Heat-Shaped Piston Rings.

Published primarily in the interest of service managers and mechanics, this manual covers engine repair work on both gasoline and Diesel engines, and is broken down into sections covering specific models such as Autocar, Buda, Continental, Dodge, GMC, Hercules, Mack, International, Reo, Studebaker, Waukesha, White, Cummins and Waukesha-Hesselman. There are also subdivisions handling specific engine problems such as excessive oil consumption, bearing replacement, piston re-grooving and so forth. Over 150 charts and illustrations are included. The complete manual is being supplied to all shops operating under the Pedrick Dealer Fran-

## Sandusky Abrasive Sticks

The Sandusky Abrasive Wheel Company, 635 W. Ransom St., Kalamazoo, Mich., has introduced a series of Flexible Abrasive Sticks.

Available in three grades and in a wide variety of sizes and shapes, these abrasive sticks are suitable for light grinding, cleaning, deburring, rust removal, sharpening, honing and polishing. They can be readily cut to shape with knife, file, grinding wheel or saw to fit special



jobs. Standard shapes include rectangular, square, triangular and round. Sizes range from  $\frac{1}{2}$  in. diameter round to 8 by 1 by  $\frac{1}{2}$  in. rectangular. Blocks are also available, 4 by  $\frac{3}{4}$  in. for large area finishing operations.

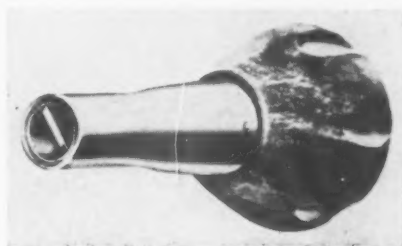
## New Arrow Catalog

Arrow Safety Device Company of Mount Holly, N. J., manufacturers of automotive safety lighting equipment, now have a complete new catalog available for distribution. Printed in four colors, the catalog covers Arrow's complete line of foglights, markers, reflectors and other items with a full description of each, listing voltage, candlepower, and all necessary specifications. Included is a replacement parts section for the ordering of Arrow parts. The Weatherly Index system has been used, so that jobbers who use this system can insert the Arrow pages in the proper section of their big catalog.

## Valve Tappet Adjuster

A simplified valve tappet adjuster is being distributed by A. D. Burney, 939 West Sixth Street, Los Angeles 14, California.

Made as a complete unit, composed of a hardwood handle and tapered, hollow steel shank, with hardened steel inset screwdriver,



the new "Spee-Just" tappet adjuster is suitable for work on all overhead valve engines.

The hollow shaft fits over the valve adjusting nut, enabling the inset screwdriver to engage and remain in place while the mechanic sets tappets for clearance. The cost of this unit is \$1.00.

## Safe Guard Containers

A new line of safety containers, called Safe Guard, has been announced by the General Detroit Corp. and its West Coast subsidiary, the General Pacific Corp. They are available in 1, 3 and 5-gallon sizes and bear the approval of Underwriters' Laboratories and Associated Factory Mutuals for storing and carrying flammable

and volatile liquids in safety.

The containers are constructed of terne plate, lead-coated inside



and out, and are finished in red enamel. The pouring spout is of non-sparking die cast brass. The two larger sizes have a specially reinforced bottom to protect them from rough usage. A flame arrester, consisting of a double screen of cadmium coated steel, is optional.

## Delco-Remy Handbook

Delco-Remy has announced the publication of a new edition of their Operation and Maintenance Handbook, D-R 324. This handbook includes a comprehensive collection of the service bulletins issued by Delco-Remy pertaining to the operation and maintenance of their products, and includes test specifications on all active models of distributors, generators, cranking motors and regulators.

The book contains over 200 pages and is printed in three colors to clarify the complex electrical circuit diagrams included. The list price of the book is \$1.50, and it is being distributed through Delco-Remy's field service organization, United Motors Service, 3044 West Grand Boulevard, Detroit 2, Mich.

## Replacement Axles for Military Vehicles

The U. S. Axle Co., Inc., of Pottstown, Penna., now has in production heavy duty replacement axles for a number of Army trucks. They have issued a bulletin listing sizes and applications of these axles. The bulletin includes such makes as Autocar, Brockway, Chevrolet, Diamond T, Dodge, Ford, GMC, International, Mack, Studebaker, White and Willys. Copies of this bulletin are available without charge by writing to the U. S. Axle Co.

# Race Story . . . . . (Continued from page 37)

south turn.

Earlier laps of the race were led by Cliff Bergere in his No. 18 Novi Governor Mobil Special. Cliff grabbed the lead on the first lap and held it until he was forced to his pit on his 23rd lap for front tires.

While Cliff held the lead several new track records were established.

After his early stop Bergere returned to the contest with great vigor but was never again better than second. His No. 18 finally suffered engine failure on its 63rd

lap and Bergere retired from the race for a time, returning later to drive the other Novi Special.

Meanwhile those two mighty Moore men, Rose and Holland, established a monopoly on first and second places. Rose made but one pit stop; Holland, two. Each of these stops was a good one. The

(Continued on page 64)

## RACE ENTRANTS

Car No	NAME	DRIVER	Engine Make	No. Cylinders	Bore	Stroke	Displacement	Supercharger	Ignition		Carburetors		Suspension		Shock Absorbers		Fuel		Oil		Qualifying Speed							
									Spark Plug	Make	Make	No. Used	Style	Piston Rings	Front	Rear	Front	Rear	Brakes	Starter		Drive	Make	Gallons	Make	Quarts	Weight	
1	Bennett Bros. Spl.	Ted Horn	MAS	8	2.68	39.4	179.2	R-2	C	S	P	ME	2	H	PC	C	F	FH	H	H	R	A	52	O	32	1900	126.554	
6	Miller Spl.	G. B. Weaver	M	8	2.76	3.50	168	C	C	B	P	W	2	DD	PC	C	C	H	H	H	B	R	A	30	RPM	32	1800	
5	Olson-Offy.	W. Ader	O	4	4.31	4.62	270	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	45	O	48	1800	
23	T.H.E. Spl.	Hinnerstiz	O	4	4.06	4.50	233	N	C	B	P	THE	2	H	B	C	C	H	H	H	B	R	A	56	O	30	1800	
23	Not Named	T. Boggs	O	4	4.25	4.50	255	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	30	RPM	32	1860	
58	Kennedy Tank Spl.	Anderson	O	4	4.31	4.62	270	N	C	B	P	W	2	DD	PC	C	C	H	H	H	B	R	A	45	RPM	40	1650	
28	Bristow-McManus Spl.	R. Free	M	8	2.87	3.50	181	C	C	B	P	B	1	DD	PC	C	C	H	H	H	B	R	A	40	O	42	1900	
53	Club Southern Spl.	Fankhauser	O	4	4.32	4.62	272	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	30	O	30	119.932	
7	Jim Hussey Spl.	J. Jackson	O	4	4.27	4.50	258	N	C	B	P	W	2	DD	PC	C	C	H	H	H	B	R	A	37	O	28	1960	
43	Federal Eng. Spl.	H. Banks	O	4	4.25	4.50	255	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	34	O	40	1980	
66	Preston Tucker Spl.	Al Miller	M	6	3.50	3.12	180	C	C	B	P	W	2	DD	PC	C	C	FH	FH	H	B	R	A	40	O	36	2228	
86	Maserati Spl.	J. Brubaker	MAS	V-8			273	N	C	B	P	W	4	DD	PC	C	C	H	H	H	B	R	A	35	RPM	60	1900	
25	Federal Eng. Spl.	Snowberger	MAS	8	2.66	3.93	179.2	R-2	C	B	P	ME	2	H	PC	C	C	F	F	H	H	B	R	A	52	O	32	2015
34	Auto. Shippers Spl.	Shorty Cantlon	M	16	2.49	3.50	272	N	C	B	P	W	4	DD	PC	C	C	H	H	H	B	R	A	28	RPM	36	1900	
31	Auto. Shippers Spl.	Frank Wearne	O	4	4.25	4.62	268	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	28	RPM	56	1750	
67	P. Murphy Spl.	C. Crawford	D	8	2.81	2.75	138	C	C	B	P	W	1	UD	PC	C	C	GH	GH	H	B	R	A	35	RPM	32	1750	
15	Wolfe Spl.	Paul Russo	O	4	4.31	4.50	262.9	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	58	O	32	1900	
35	E.R.A.	H. L. Brooke	ERA	6	2.48	3.14	90	Z	B	SU	2	DD	I	D	HY	HY	HY	HY	HY	HY	R	A	32			1450		
55	Dixon Spl.	G. Metzler	C	4	3.50	3.62	183	C	C	B	P	W	2	DD	PC	C	C	H	H	H	B	R	A	35	RPM	25		
18	Novi Governor Spl.	C. Bergere	W	V-8	3.12	2.93	181	C	C	B	P	W	3	DD	PC	C	C	H	H	H	B	R	A	60	O	50	1919	
54	Novi Governor Spl.	Ardinger	W	V-8	3.12	2.93	181	C	C	B	P	W	3	DD	PC	C	C	H	H	H	B	R	A	60	O	50	1919	
46	Mercedes	Duke Nalon	MER	12	2.63	2.75	182.7	R-2	R	B	M-B	1-D	H	PC	C	C	D	HY	HY	H	B	R	A	70	M	64	128.082	
47	Don Lee Spl.	K. Fowler	A-R	8	2.67	3.93	176	R-2	C	B	P	WE	2	UD	PC	C	C	HY	HY	H	B	R	A	60	O	36	2012	
52	Palmer Spl.	H. Robson	O	4	4.25	4.50	255	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	27.5	RPM	30	1955	
41	Ross-Page Spl.	F. Agabashian	O	4	3.81	4.00	183	R	C	B	P	M	2	DD	PC	C	C	H	H	H	B	R	A	70	O	60	1890	
16	Blue Crown Spark Plug	Holland	O	4	4.31	4.62	270	N	BC	B	P	R	2	H	B	I	C	FH	H	H	B	R	A	40	O	28	128.755	
27	Blue Crown Spark Plug	Mauri Rose	O	4	4.31	4.62	270	N	BC	B	P	R	2	H	B	I	C	FH	H	H	B	R	A	40	O	28	128.755	
29	Belanger Spl.	T. Bettenhausen	BE	8	3.37	3.75	268	N	C	B	P	W	4	DD	PC	C	C	F	F	H	B	R	A	43	O	42	120.980	
69	Allison Spl.	N. Houser	F	V-8	3.37	3.75	268	N	C	B	P	S	2	D	PC	C	C	D	F	F	H	B	R	A	20	O	24	2100
44	Tucker Partner Spl.	Chas. Van Acker	O	4	4.29	4.50	265	N	BC	B	P	W	2	D	PC	C	C	H	H	H	B	R	A	36	O	48	1900	
9	Bowes Seal Fast Spl.	R. Mays	B	8	2.96	3.25	179	C	BO	B	P	W	2	D	PC	C	D	H	H	H	B	R	A	82	O	2080	124.412	
33	Permafuse Spl.	W. Brown	A-R	8	2.61	3.93	183	R-2	C	B	P	WE	2	UD	PC	C	C	I	HY	HY	H	B	R	A	36	O	48	1900
34	Tattersfield Spl.	Marshall	A-R	8	3.01	3.20	182	R-2	C	B	P	WE	2	UD	PC	C	C	FH	FH	H	B	R	A	36	O	48	1900	
59	Camco Spl.	P. Romevich	F	V-8	3.30	4.00	274	N	C	B	P	S	2	DD	PC	C	C	I	F	F	H	B	R	A	25	O	21	1960
64	Mauro Spl.	J. Mauro	M	8	2.00	3.00	98	C	C	B	P	W	1	H	PC	C	C	H	H	H	B	R	A	39	RPM	32	1974	
8	Peters Spl.	J. Chitwood	O	4	4.31	4.62	270	N	C	B	P	W	2	UD	PC	C	C	FH	H	H	B	R	A	31	O	40	1950	
14	Walsh Spl.	G. Connor	O	4	4.31	4.62	270	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	37	O	32	1870	
10	Schoof Spl.	Duke Dinsmore	O	4	4.31	4.62	270	N	C	B	P	W	2	UD	PC	C	C	H	H	H	B	R	A	35	O	30	119.840	

### ABBREVIATIONS

#### ENGINE MAKE

MAS—Maserati  
M—Miller  
O—Offenhauser  
S—Sparks  
AR—Alfa-Romeo  
C—Clemens  
W—Winfield  
MER—Mercedes  
F—Ford  
D—Dusenberg  
T—Talbot  
B—Bowes

#### PISTON RINGS

PC—Perfect Circle  
B—Burd

### DRIVE

F—Front  
R—Rear  
4W—4-wheel

#### SUPERCHARGER

R—Rootes  
C—Centrifugal  
N—None  
Z—Zoller

#### SPARK PLUGS

C—Champion  
B—Bowes  
BC—Blue Crown  
B—Bosch

#### IGNITION

B—Bosch  
S—Scintilla

### IGNITION CABLE

P—Packard

#### CARBURETORS

B—Bendix  
ME—Memmi  
M—Miller  
W—Winfield  
S—Stromberg  
WE—Weber  
R—Riley  
THE—Ted Horn Engr.  
M-B—Mercedes-Benz

#### STYLE

H—Horizontal  
UD—Updraft  
DD—Downdraft  
1-D—One-Dual

### SUSPENSION

I—Independent  
C—Conventional  
D—DeDion

#### BRAKES

H—Hydraulic  
M—Mechanical

#### SHOCK ABSORBERS

HY—Hydraulic  
H—Houdaille  
F—Friction Types  
HF—Hartford  
MA—Maserati  
G—Gabriel  
FH—Friction and Hydraulic  
N—None

### STARTER

H—Handcrank  
D—Delco  
B—Bosch  
E—Electric

#### FUEL

A—Alcohol Blend  
G—Gasoline Blend  
P—Petro-Gas  
M-B—Mobil-Blend

#### OIL

O—Oilsum  
RF—McMillan Ring Free  
M—Mobiloil

## How They Finished

Finish Position	Driver	Car Number	Car Name	Average M.P.H.	Cause of Withdrawal	With-drawn at Lap No.	Finish Position	Driver	Car Number	Car Name	Average M.P.H.	Cause of Withdrawal	With-drawn at Lap No.
1	Mauri Rose	27	Blue Crown S. P. Spl.	116.338			8	Peters Spl.	8			Broken starter	122
2	Bill Holland	16	Blue Crown S. P. Spl.	116.097			46	Don Lee Spl.	46			Broken piston	120
3	Ted Horn	1	Bennett Bros. Spl.	114.799			28	Bristow-McManus Spl.	28			Broken rod	88
4	Ardinger-Bergere	54	Novi Gov. Mobil Spl.	113.404			29	Belanger Spl.	29			Broken timing gear	80
5	Jimmy Jackson	7	Jim Hussey Spl.	112.834			25	Federal Engineering Spl.	25			Oil pressure	72
6	Rex Mays	9	Bowes Sealfast Spl.	111.055			52	Palmer Spl.	52			Universal joint	68
7	Walt Brown	33	Permafuse Spl.	101.744			18	Novi Gov. Mobil Spl.	18			Engine failure	63
8	Cy Marshall	34	Tattersfield Spl.	99.000	Flagged		24	Automobile Shippers Spl.	24			Crashed	40
9	F. Agabashian	41	Ross Page Spl.	99.614	Flagged		14	Ed Walsh Spl.	14			Split gas tank	38
10	Duke Dinsmore	10	Schoof Spl.	84.216	Flagged		66	Preston Tucker Spl.	66			Magneto trouble	38
	Les Anderson	58	Kennedy Tank Spl.	Also Ran	Broken gas tank		43	Federal Engineering Spl.	43			Oil supply exhausted	35
	Pete Romevich	59	Camco Spl.	Also Ran			38	Thorne Engineering Spl.	38			Disqualified	35
	Frank Wearne	31	Superior Industries Spl.		Spin	168	15	Wolfe Spl.	15			Collision	22
	Emil Andres	3	Preston Tucker Ptnr. Spl.		Magneto trouble	149	44	Preston Tucker Ptnr. Spl.	44			Collision	22
	Ken Fowler	47	Alfa-Romeo Spl.		Broken rear axle	139	53	Club Southern Spl.	53			Broken rear axle	16



**You've been hearing a lot about  
Studebaker's postwar cars...**

**but have you  
noticed what  
Studebaker trucks  
are doing?**

They're 'way up in production  
... 'way up in registrations ...  
many times ahead of  
Studebaker's best pre-war record!

**Is it any wonder that  
dealers prize the  
Studebaker franchise?**

**"Our Studebakers  
out-pull our other trucks"**

**"Recommend Studebaker trucks  
highly for performance  
under load"**

**"Drivers tell me they  
ride easier and  
handle easier"**

**"Our Studebakers  
average more miles  
per gallon than our  
other trucks"**

**"Other trucks in  
same price range  
cost us much  
more to run"**

**"More economical in mountain  
country than any other truck  
we operate"**

**"Our Studebakers have  
reduced our costs an  
average of 17% per truck"**

**STUDEBAKER**  
*Builder of trucks you can trust*

The Studebaker Corporation, South Bend 27, Indiana, U.S.A.

## Race Story . . . . . (Continued from page 62)

lead changed hands as the respective stops were made. The Rose-Holland team ruled the roost the rest of the day, except for a brief period following Holland's first stop when Rex Mays came up into second place and held it for 20 laps or so.

Ted Horn, National AAA champion for 1946, again suffered a cruel break when an overflowing oil tank cost him two stops totaling 6 minutes and more. The first of these came in Horn's 9th lap, the second in his 13th.

This misfortune lost Ted approximately six valuable laps. At race end Horn had made up four of the six lost laps, and arrived in third place after a valiant drive from four out of the ruck into which his unlucky stops dumped him.

Aside from Horn's great comeback and the consistent command maintained by the two Blue Crown cars, the race was distinguished by a series of mishaps which kept fans on their feet. First of these saw Charles Van Acker spin coming into the home straightway. His car collided with that of Paul Russo. Next came the tragic Cantlon crash. About mid-race Roland Free dumped an assortment of important engine parts as he traversed the home stretch. Entering the south turn his powerless car spun. Jimmy

Jackson, following close behind, was busy ducking pieces and when Free's car spun, the attempt to avoid it caused his own mount to loop and graze the wall. Neither driver was injured. Jackson continued the race after accepting a towing start which cost him a penalty of one lap.

Other spins and spills of less spectacular nature occurred, but the attention of the crowd was centered on the Rose-Holland dictatorship. Holland, who led right up to the 193rd lap, saw Rose pass him for the lead at that time. He did not challenge Rose because he was under the impression that Mauri was a lap behind. "Indeed, Holland acknowledged the wave of the checkered flag in the belief he was the winner. After the race a smart little fuss developed in the Moore-Holland-Rose ranks but the winner's laurels and checks went to Mauri Rose. Holland, whose second pace plus lap prizes amounted to almost as much cash as Rose's proceeds from the speedway, made emphatic protest, which even appeared in print, but did not alter the results.

Too much cannot be said in praise of Lou Moore and his handiwork—the Blue Crown Spark Plug Specials. To build and prepare two new cars so well that they capture first and second at Indianapolis is a

feat before which racing authorities must bow in admiration, regardless of any breaks which might or might not have been factors in the victory.

Representing the also-rans, a word should be added concerning the performance of Duke Nalon's Don Lee Special (Mercedes). Duke did well with this mount in the early laps of the race. He ran a comfortable fourth and fifth for many miles, always within striking distance of the leaders.

The Mercedes chassis quite obviously fits Indianapolis like a glove. Duke's conservative positioning of this car might have been due to an understandable yearning to woo fuel economy, a virtue which this car does not possess to any great degree.

The Don Lee interests, as represented by Mal Ord and Associates, can well take encouragement from their work with this Mercedes. Given more time for preparation, this car undoubtedly will come into its own, as it is, understanding that the Mercedes was not even complete when it reached his hands, one must say that Ord did a very creditable piece of work in getting the car into the competition. The car ran about 300 miles before dropping out with a broken piston. Prior to this it had made 3 pit stops, the first for fuel and the others for fuel and plugs.

Race day turned out to be clear and cool and the heat of the mid-day sun was welcome.

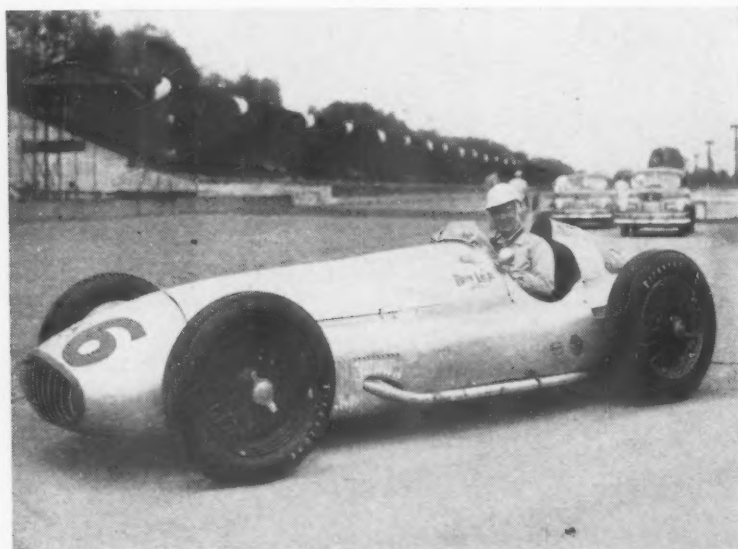
Under such conditions those troubles due to high temperatures were absent. Tires held up well as usual. Unexpectedly few engine failures were encountered.

The 1947 pre-race preparations were begun with a total of 35 entries, the lowest number on record for many years. Reason for this phenomenally meager array of racing machinery was a controversy between the Speedway and a group of drivers and car owners known as ASPAR and headed by Ralph Hepburn. This organization asked that the Speedway increase its prize money allotment to \$150,000.00 for this race.

The Speedway refused to comply with this demand and subsequent

(Continued on page 134)

The Don Lee Mercedes driven by Duke Nalon proved its speed by turning in a qualifying trial of 128.082 mph. It was finally forced out of the big race by a broken piston after 300 miles of excellent performance.





## Pep up horsepower . . .

Your customers can step in their cars . . . step on the gas . . . and step out with faster pick-up, more power and smoother performance—immediately after you've sold 'em a Casite tune-up. It's quick, easy and a service that's appreciated.

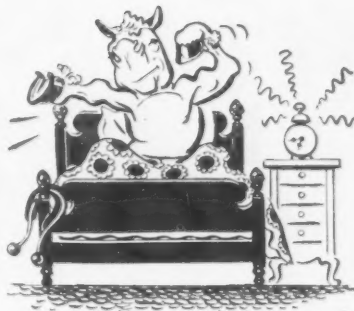
## and keep it pepped up

Suggest Casite to every car owner that drives in. And tell 'em to use it regularly—a pint through the air intake every three months and a pint in the crankcase every oil change. Casite retards formation of sludge and gum . . . speeds lubrication . . . cleans motors and keeps them clean.

## . . . the guaranteed way!

Increase your income by always selling Casite on the famous guarantee of "Better and Smoother Performance or Double-Your-Money-Back." It's such an easy way to get motorists to try Casite . . . and you know from experience that Casite customers keep coming back for more. The Casite Corporation, Hastings, Michigan.

**SELL CASITE FOR NEW CAR BREAK-IN, TOO**



**CLEANS MOTORS  
KEEPS  
MOTORS CLEAN**

LIST PRICE  
65¢ A PINT



# Current Passenger Car Price, Weight and Body Table

Following are two sets of car prices, at factory, as of the end of January, 1947. The list price which does not include federal taxes or handling charges is compared with the suggested delivered price at factory which includes federal taxes and handling charges where noted. All prices are for cars with standard equipment. State or local taxes, transportation and finance charges and optional equipment are extra.

BODY, MAKE AND MODEL	List Prices at Factory without Federal Taxes	Federal Taxes	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY, MAKE AND MODEL	List Prices at Factory without Federal Taxes	Federal Taxes	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY, MAKE AND MODEL	List Prices at Factory without Federal Taxes	Federal Taxes	Delivered Price at Factory including Federal Taxes	Shipping Weight
<b>BUICK</b>					<b>DODGE</b>					<b>OLDSMOBILE* (Continued)</b>				
Series 40					DeLuxe					Series 68-8				
Sedan, 4d.	\$1488	\$87	\$1555	3720	Coupe	\$1229	\$68	\$1297	3146	Stat. Wagon	\$2228	\$147	\$2375	3900
Sedanet, 2d.	1413	84	1497	3670	Sedan, 2d.	1299	72	1371	3238	Conv. Coupe	1880	118	1798	3741
Series 50					Sedan, 4d.	1339	74	1413	3256	Club Coupe	1361	102	1463	3446
Sedan, 4d.	1689	98	1787	3910	Custom					Club Sedan	1387	103	1490	3453
Conv. Coupe	2052	117	2169	4050	Club Coupe	1384	76	1460	3241	Sedan, 4d.	1422	105	1527	3486
Sedanet, 2d.	1612	94	1706	3795	Conv. Coupe	1649	90	1739	3481	Series 78-8				
Estate Wagon	2422	137	2559	4170	Sedan, 4d.	1389	77	1466	3281	Club Sedan, Std.	1445	109	1554	3612
Series 70					Twn. Sedan	1444	80	1524	3311	Club Sedan, DeL.	1554	112	1666	3650
Sedan, 4d.	1949	111	2060	4385	Sedan, 4d., 7p.	1743	96	1839	3757	Sedan, 4d., Std.	1512	112	1624	3638
Conv. Coupe	2324	131	2455							Sedan, 4d., DeL.	1618	115	1733	3705
Sedanet, 2d.	1857	107	1964		<b>FORD†</b>					Series 98-8				
<b>CADILLAC*</b>					DeLuxe 6					Conv. Coupe	2040	141	2181	4049
Series 61					Coupe	1036	74	1110	3033	Club Sedan	1642	120	1762	3715
Club Coupe	1945	134	2079	4270	Tudor	1070	76	1146	3183	Sedan, 4d.	1690	122	1812	3795
Tour. Sedan	2060	143	2203	4270	Fordor	1154	80	1234	3213					
Series 62					Super DeL. 6					<b>PACKARD</b>				
Club Coupe	2161	150	2311	4385	Coupe	1125	78	1203	3033	Clipper Six				
Conv. Coupe	2567	174	2741	4385	Tudor	1135	79	1214	3183	Tour. Sedan			1845	3495
Tour. Sedan	2230	156	2386	4385	Fordor	1195	82	1277	3233	Club Sedan			1820	3450
Series 60					Sed. Coupe	1180	81	1261	3133	DeL. & Clipper				
Tour. Sedan	2924	202	3126	4500	Stat. Wagon	1468	97	1565	3487	Tour. Sedan			2047	3670
Series 75					DeLuxe V8					Club Sedan			2022	3625
Tour. Sedan, 5p.	4065	275	4340	5000	Coupe	1086	76	1162	3066	Super 8 Clipper				
Sedan, 7p.	4239	278	4517	5000	Tudor	1120	78	1198	3216	Tour. Sedan			2591	3995
Imperial, 7p.	4422	289	4711	5000	Fordor	1204	83	1287	3248	Club Sedan			2566	3950
Bus. Sedan, 9p.	3930	265	4195	5000	Super DeL. V8					Cus. Sup. 8 Clip.				
Bus. Imperial, 9p.	4111	277	4388	5000	Coupe	1175	81	1256	3066	Tour. Sedan			3349	4060
					Tudor	1220	83	1303	3216	Club Sedan			3284	4000
					Fordor	1279	86	1365	3266	Limousine			4668	4900
					Sedan Coupe	1253	85	1338	3166	Sedan, 7p.			4504	4870
					Conv. Club Cpe.	1436	95	1531	3266					
					Sportsman	1921	120	2041	3366	<b>PLYMOUTH</b>				
					Stat. Wagon	1517	100	1617	3520	DeLuxe				
										Coupe, 3p.	1054	62	1116	2977
					<b>FRAZER</b>					Club Coupe	1104	64	1168	3037
					Sedan, 4d.	2143	111	2254	3365	Sedan, 2d.	1079	63	1142	3047
										Sedan, 4d.	1129	66	1195	3082
					<b>HUDSON*</b>					Spec. DeLuxe				
					Super Six 171					Coupe, 3p.	1134	65	1199	2982
					Sedan, 4d.	1536	113	1649	3110	Club Coupe	1189	68	1257	3057
					Brougham	1493	111	1604	3055	Conv. Coupe	1438	82	1521	3282
					Coupe, 3p.	1421	107	1528	2978	Sedan, 2d.	1164	67	1231	3062
					Club Coupe	1531	113	1644	3040	Sedan, 4d.	1214	69	1283	3107
					Conv. Brougham	1844	130	1974	3220	Stat. Wagon	1539	87	1626	3402
					Com. Six 172									
					Sedan, 4d.	1675	121	1796	3175	<b>PONTIAC*</b>				
					Club Coupe	1667	120	1787	3090	Streamliner 8				
					Super 8, 173					Sedan Coupe	1359	104	1463	3405
					Sedan, 4d.	1638	124	1772	3260	Sedan, 4d.	1407	107	1514	3460
					Club Coupe	1632	123	1755	3210	Stat. Wagon	1992	138	2130	
					Com. Eight 174					DeL. Sta. Wagon	2066	141	2207	3725
					Sedan, 4d.	1742	130	1872	3330	Torpedo 8				
					Club Coupe	1726	129	1855	3260	Bus. Coupe	1217	96	1313	
					Conv. Broughm.	2005	144	2149	3435	Sport Coupe	1261	98	1359	3300
										Sedan Coupe	1305	100	1405	3305
					<b>KAISER</b>					Sedan, 2d.	1275	99	1374	3305
					Sedan, 4d.	1958	105	2063	3305	Sedan, 4d.	1331	102	1433	3330
										Conv. Sed. Cpe.	1595	116	1711	3570
					<b>LINCOLN†</b>					Streamliner 8				
					Sedan, 4d.	2185	152	2337	4015	Sedan Coupe	1404	107	1511	3460
					Cus. Sedan, 4d.	2327	159	2486	4015	Sedan, 4d.	1452	109	1561	3520
					Club Coupe	2167	151	2318	3915	Stat. Wagon	2037	140	2177	
					Cus. Club Cpe.	2309	158	2467	3915	DeL. Sta. Wagon	2111	143	2254	3795
					Conv. Coupe	2704	179	2883	4245	Torpedo 8				
					Cont. Coupe	4125	267	4392	4125	Bus. Coupe	1262	98	1380	
					Cont. Cabriolet	4205	271	4476	4135	Sport Coupe	1306	100	1406	3365
										Sedan Coupe	1350	102	1452	3375
					<b>MERCURY†</b>					Conv. Sed. Cpe.	1640	118	1758	3645
					Sedan, 2d.	1404	97	1501	3268	Sedan, 2d.	1320	101	1421	3375
					Twn. Sedan, 4d.	1462	100	1562	3298	Sedan, 4d.	1376	104	1480	3415
					Sedan Coupe	1449	99	1548	3218					
					Club. Conv.	1654	110	1764	3368	<b>STUDEBAKER*</b>				
					Sportsman	2128	135	2263	3435	Champion DeL.				
					Stat. Wagon	1676	112	1788	3571	Sedan, 4d.	1292		1388	2735
										Sedan, 2d.	1262		1356	2685
					<b>NASH*</b>					Coupe, 5p.	1287		1383	2670
					600 Series					Coupe, 3p.	1197		1288	2600
					Sedan, 4d., Trk.	1270	94	1364	2788	Champ. Reg. DeL.				
					Brougham, 2d.	1221	94	1315	2731	Sedan, 4d.	1362		1462	2760
					Sedan, 4d.	1228	94	1320	2826	Sedan, 2d.	1332		1430	2710
					Ambassador					Coupe, 5p.	1357		1456	2690
					Sedan, 4d., Trk.	1321	110	1631	3387	Coupe, 3p.	1257		1362	2620
					Brougham, 2d.	1463	110	1573	3312	Commander DeL.				
					Sedan, 4d.	1479	110	1589	3412	Sedan, 4d.	1544		1657	3265
					Suburban	1917	132	2049	3522	Sedan, 2d.	1514		1626	3230
										Coupe, 5p.	1539		1652	3210
					<b>OLDSMOBILE*</b>					Coupe, 3p.	1449		1557	3140
					Series 66-6					Comm. Reg. DeL.				
					Stat. Wagon	2175	144	2319	3770	Sedan, 4d.	1659		1778	3280
					Conv. Coupe	1627	115	1742	3611	Sedan, 2d.	1629		1747	3245
					Club Coupe	1308	99	1407	3616	Coupe, 5p.	1654		1773	3225
					Club Sedan	1334	99	1433	3323	Coupe, 3p.	1564		1678	3155
					Sedan, 4d.	1369	102	1471	3356					
					Series 76-6					<b>WILLYS</b>				
					Club Sedan, Std.	1392	105	1497	3495	Station Wagon	1495			
					Club Sedan, DeL.	1500	110	1610	3515					
					Sedan, 4d., Std.	1459	109	1568	3523					
					Sedan, 4d., DeL.	1565	113	1678	3590					

\*—Federal Excise taxes and Delivered Price at Factory include dealer handling charges. †—Preparation and conditioning charges are included with Federal taxes.

# "Taken for granted" Service...

AMERICANS take for granted the morning milk on their doorsteps, with never a thought to the fleets of cars and trucks whose faultless performance make this modern miracle possible. Here is a tribute, as well-earned as it is silent, to the honest workmanship and original factory parts supplied by thousands of the nation's automotive service men.

This high standard of service has helped keep America rolling, even through the urgency of recent years. It has proved, too, a



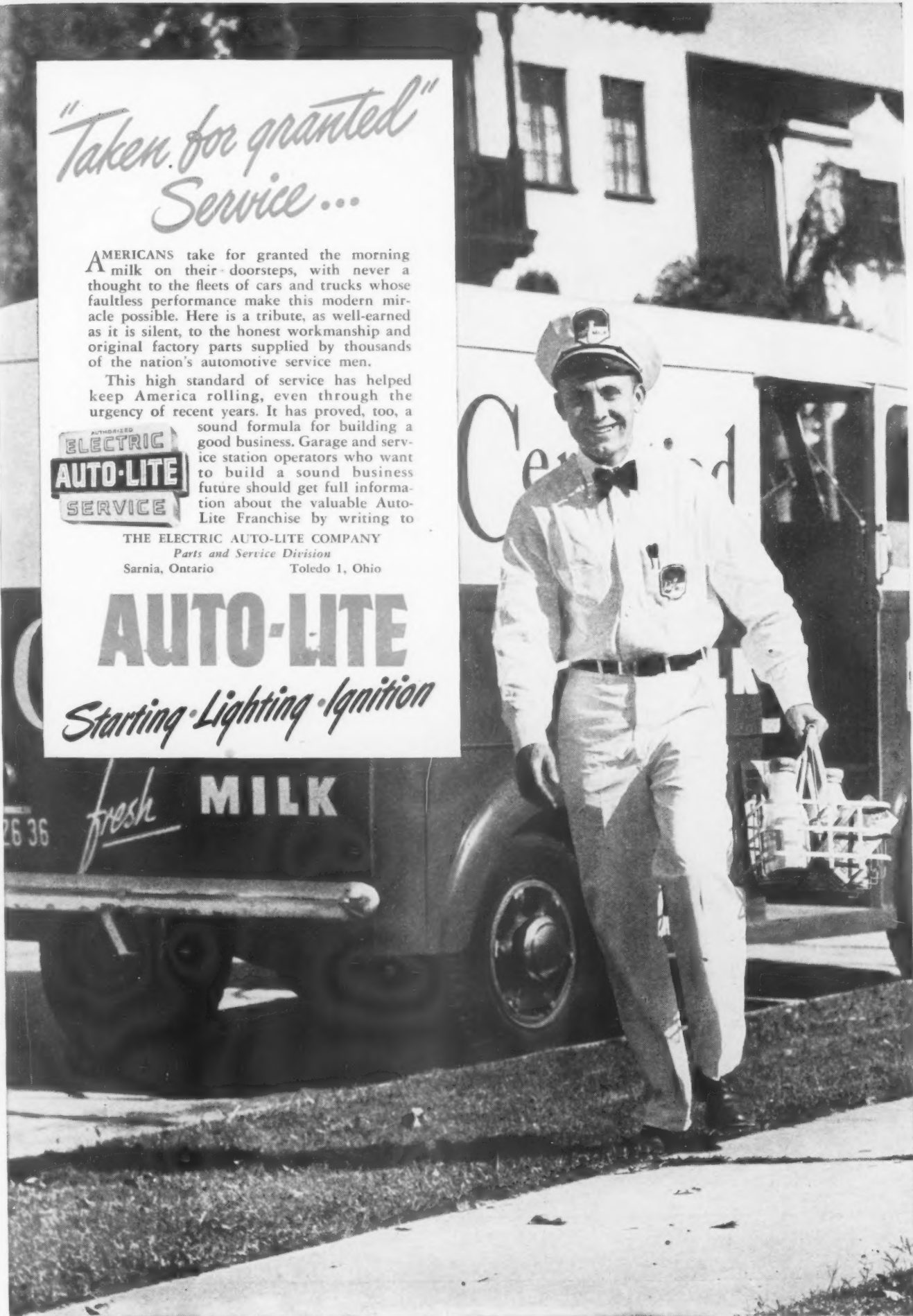
sound formula for building a good business. Garage and service station operators who want to build a sound business future should get full information about the valuable Auto-Lite Franchise by writing to

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## AUTO-LITE

*Starting · Lighting · Ignition*

26 36 *fresh* MILK



# Current Engine and Tune-up Specifications

[illegible]

—With standard accessories.

**AC**—AC Spark Plug Division  
**AL**—The Electric Auto-Lite Corp.  
**AT**—After Top Center  
(b)—At 2400 RPM  
**B**—Below (Rods removed from)  
**BT**—Before Top Center

(c)—Upper ring .1875 in.; lower ring .15625 in.

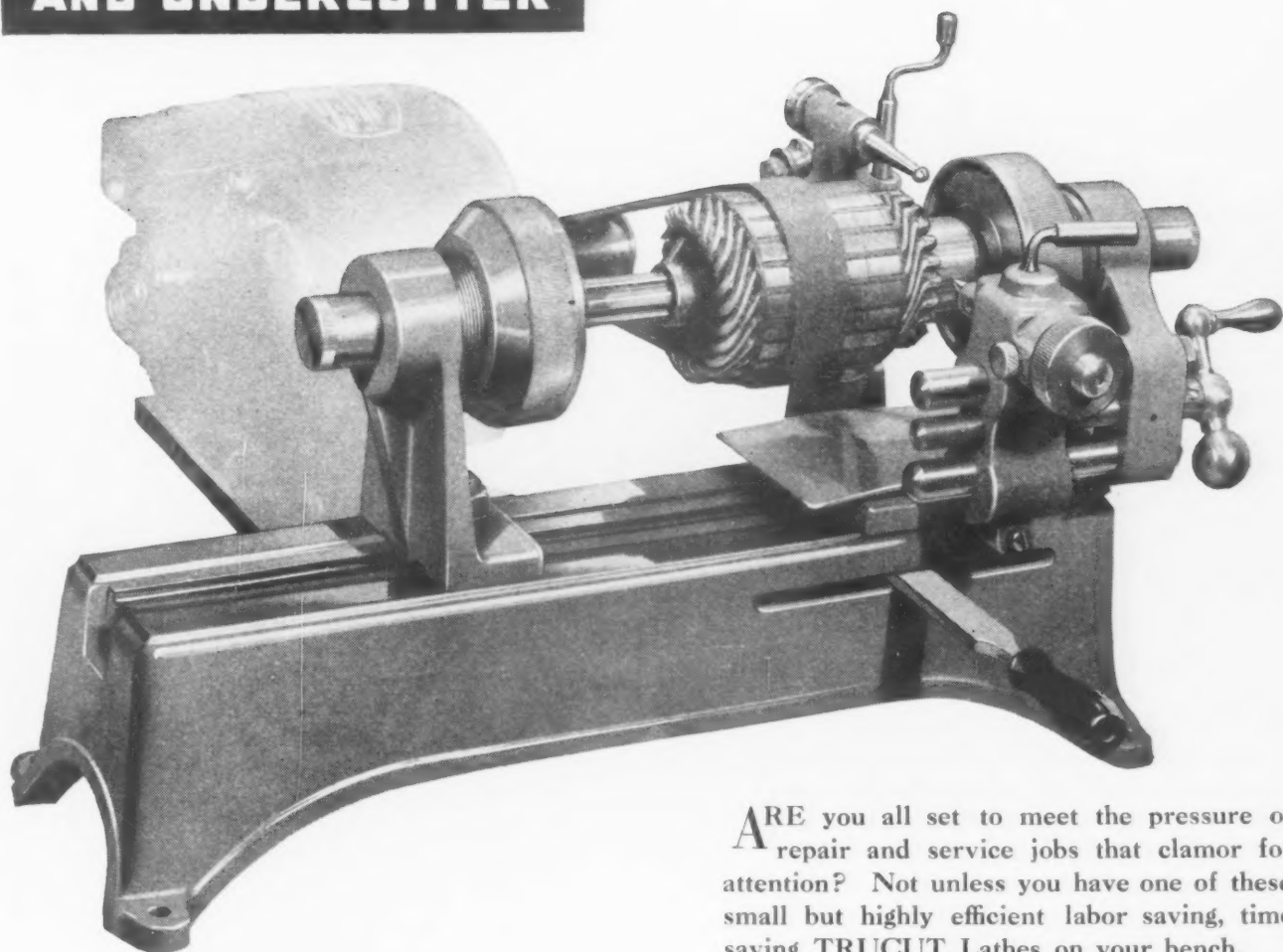
(e) Ring No. 1—.093 in.; Ring No. 2—.123 in.  
(f) Models 25 and 27—119 in.; Models 26 and 28—122 in.  
FIV—Flywheel  
FVD—Flywheel vibration damper  
(g) Top ring  $\frac{1}{16}$ ; Middle ring  $\frac{1}{8}$

(h)  $-\frac{3}{64}$  in. Before Top Center



# TRUCUT

## ARMATURE LATHE AND UNDERCUTTER



*...Does*  
**MORE JOBS**  
*faster -  
more accurately  
- profitably*

Also TRUCUT  
TAILSTOCK REST  
and  
ARMATURE TESTER

ARE you all set to meet the pressure of repair and service jobs that clamor for attention? Not unless you have one of these small but highly efficient labor saving, time saving TRUCUT Lathes on your bench.

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Drastic treatment for serious trouble. Burning the top tank off with the torch before rebuilding or undertaking a major repair.

## Checking the Cooling System

A systematic way that saves time in looking for cooling troubles . . . by **RICHARD L. REDDY**

**E**VERY time summer comes, a lot of cars are sure to run a fever. After all, the operating temperature of most modern high-compression, high-speed engines is up between 160 and 180 degrees F., and that's not too far from boiling. Add a thick, clogging coat of rust, sludge and scale to impede the circulation, or open up a few leaks to reduce the amount of coolant available, and the engine soon simmers up to 212.

There's nothing secret about a boiling engine. You don't need a divining rod when the cooling system throws up . . . and lies down. But it's not that easy to track down all the troubles that may be present in a balky system. For one thing, there's no gage on the market that will tell you when a system is thoroughly clean, and a water jacket that runs clean water under test may still be loaded with sludge back in the corners of the block, waiting to work back into the radiator when the weather warms up or higher speeds are reached. That's why a thorough periodic check is advisable for all cars if they are to avoid the cylinder scores, cracked jackets and valve seats or even seized pistons that may result from serious overheating. Of course, not all cooling troubles are caused by the cooling system itself. They may, instead, be symptoms of poor lubrication, bad timing, bad gaskets or other engine faults.

There are three broad divisions of cooling trouble; external leaks, internal leaks and clogging by rust and scale. Any or all of these conditions may cause or contribute to cooling trouble. Evaporation, though a factor in very hot weather, normally accounts for relatively little loss in a tight system.

If there is reason to believe that external leaks are to blame for coolant loss, a check should be made with the engine cold, as a hot engine will often evaporate escaping water before it can be seen. Also, the hot engine has a tendency to close up small leaks by expansion, only to let them open up again when it cools off. A car that has stood for a while, however, will usually show wet spots on the floor in the vicinity of the leaks, although the water

may run along chassis members away from the leak itself. Stains around joints, on the radiator core, around hoses or plugs are to be regarded with suspicion. A check should be made that covers the radiator core, the radiator tank seams, the head studs, the water jacket plate (if there is one), all plugs and drains and all hoses and clamps.

Once an external leak has been located, it can easily

*(Continued on page 142)*



**BOY! WHAT A SHINE!**  
**VENUS POLISH**  
**CLEANS AND WAXES IN**  
**ONE EASY OPERATION!**

In one operation—in less than an hour—VENUS double-action POLISH cleans and waxes! It quickly removes the accumulation of dirt, scum, and oxidation that makes a car dull and dingy . . . provides a beautiful *weather-tested* wax finish that *really* lasts . . . defies sun, rain, snow!

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 Polish Assortment #47V—a volume-profit builder!



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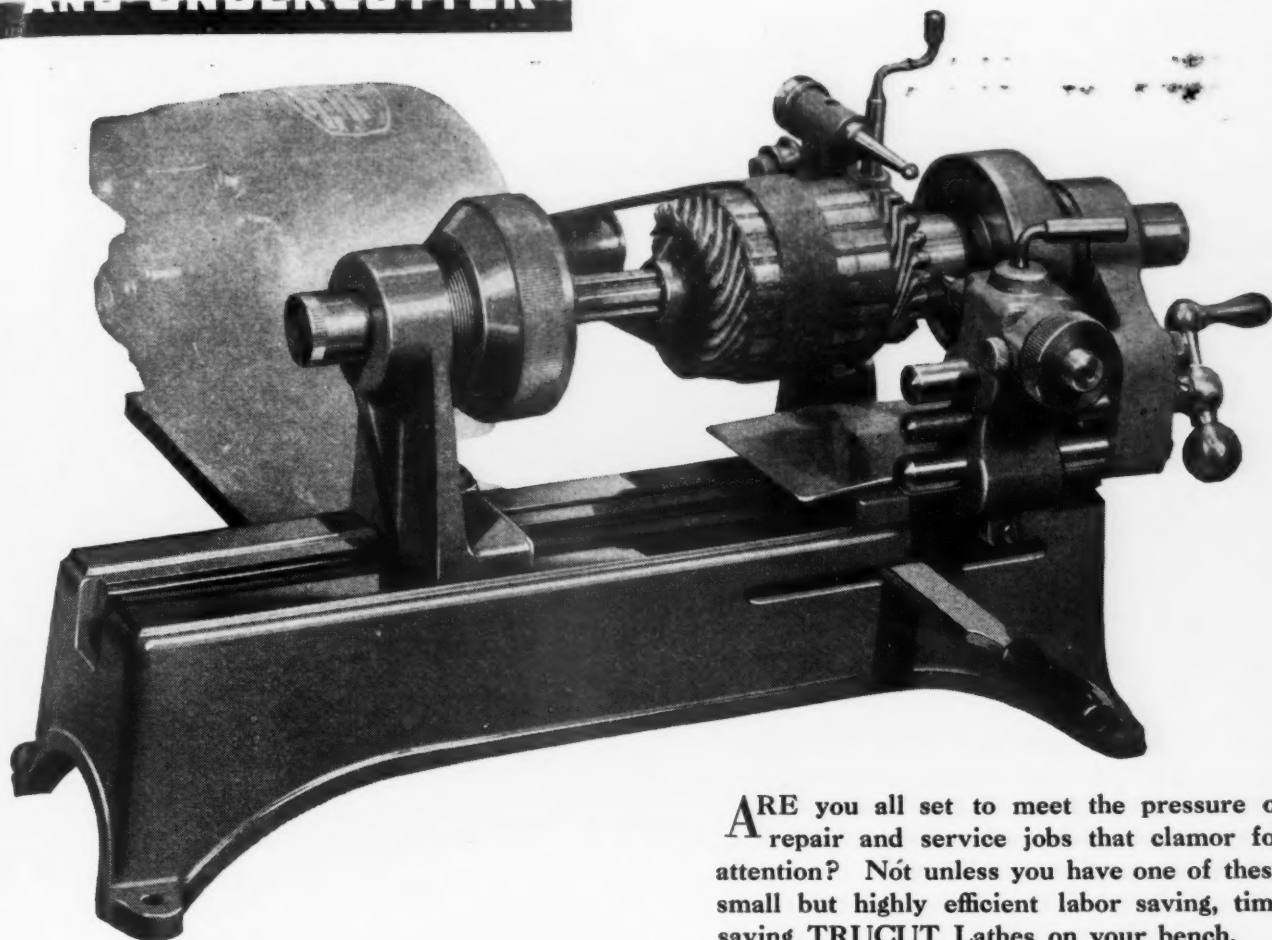
# Current Engine and Tune-up Specifications

MAKE AND MODEL	ENGINE					TUNE-UP DATA										FRONT AXLE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Wheelbase (In.)	No. of Cylinders, Bore and Stroke	Taxable Hp.	Piston Displacement (Cu. In.)	Compression Ratio	Cranking Speed (R.P.M. at Specified R.P.M. with Bare Engine)	Spark Plug Make and Type	Rings		VALVES				IGNITION			Caster (Deg.)	Camber (Deg.)	Toe-In (In.)	King Pin Inclination (Deg.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
								No. and Width	No. and Width	Seat Angle	Stem Diameter (In.)	Operating Tapet Clearance	Timing	Timing Marks	Breaker Point Gap	Cam Angle (Deg.)					Spark Plug Gap	Spark Occurs	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing Marks	Timing 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\* With standard accessories.  
 (a) Model 61—126 in.; Model 62—129 in.; Model 69—133 in.  
 A—Above (Rods removed from)  
 AA—Automatic Adjustment  
 AC—AC Spark Plug Division  
 AL—Aluminum  
 AT—After Top Center  
 B—Below (Rods removed from)  
 BT—Before Top Center  
 CC—Champion Spark Plug Co.  
 CH—Champion Spark Plug Co.  
 DH—Distributor Housing  
 FVD—Flywheel vibration damper  
 FVO—Flywheel vibration damper  
 TC—Timing Gears  
 TD—Timing Gears  
 VD—Vibration Damper  
 (b) 1/2 in. Before Top Center  
 (c) 1/2 in. Before Top Center  
 (d) 1/2 in. Before Top Center  
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 (x) 1/2 in. Before Top Center  
 (y) 1/2 in. Before Top Center  
 (z) 1/2 in. Before Top Center

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**MORE JOBS**  
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## Checking the Cooling System

A systematic way that saves time in looking for cooling troubles . . . by **RICHARD L. REDDY**

**E**VERY time summer comes, a lot of cars are sure to run a fever. After all, the operating temperature of most modern high-compression, high-speed engines is up between 160 and 180 degrees F., and that's not too far from boiling. Add a thick, clogging coat of rust, sludge and scale to impede the circulation, or open up a few leaks to reduce the amount of coolant available, and the engine soon simmers up to 212.

There's nothing secret about a boiling engine. You don't need a divining rod when the cooling system throws up . . . and lies down. But it's not that easy to track down all the troubles that may be present in a balky system. For one thing, there's no gage on the market that will tell you when a system is thoroughly clean, and a water jacket that runs clean water under test may still be loaded with sludge back in the corners of the block, waiting to work back into the radiator when the weather warms up or higher speeds are reached. That's why a thorough periodic check is advisable for all cars if they are to avoid the cylinder scores, cracked jackets and valve seats or even seized pistons that may result from serious overheating. Of course, not all cooling troubles are caused by the cooling system itself. They may, instead, be symptoms of poor lubrication, bad timing, bad gaskets or other engine faults.

There are three broad divisions of cooling trouble; external leaks, internal leaks and clogging by rust and scale. Any or all of these conditions may cause or contribute to cooling trouble. Evaporation, though a factor in very hot weather, normally accounts for relatively little loss in a tight system.

If there is reason to believe that external leaks are to blame for coolant loss, a check should be made with the engine cold, as a hot engine will often evaporate escaping water before it can be seen. Also, the hot engine has a tendency to close up small leaks by expansion, only to let them open up again when it cools off. A car that has stood for a while, however, will usually show wet spots on the floor in the vicinity of the leaks, although the water

may run along chassis members away from the leak itself. Stains around joints, on the radiator core, around hoses or plugs are to be regarded with suspicion. A check should be made that covers the radiator core, the radiator tank seams, the head studs, the water jacket plate (if there is one), all plugs and drains and all hoses and clamps.

Once an external leak has been located, it can easily

*(Continued on page 142)*

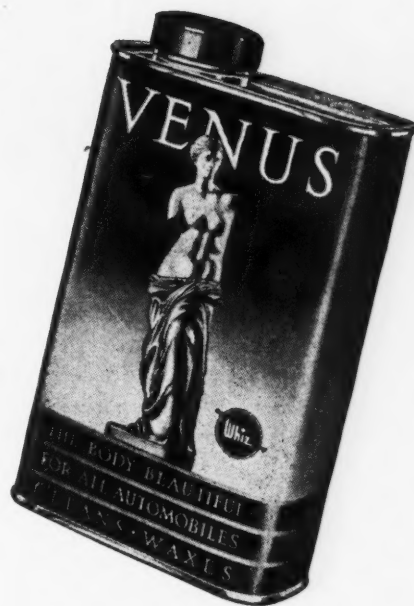




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**Hollingshead**  
 LEADER IN MAINTENANCE CHEMICALS

## Two Speed Axle . . . . (Continued from page 39)

cages on this unit supplied with the bearing outer races already pressed in place as part of the assembly.

To reassemble, the pinion bearings are lubricated, the spacer is placed on the pinion shaft, and the shaft with spacer is installed in the cage. The front bearing is placed on the pinion shaft and driven into position with a tubu-

lar driver. The universal joint flange is installed under a minimum press load of 2½ tons, the washer and nut are installed and the nut is tightened to 300 or 400 foot pounds pressure.

The cage web is clamped in a vise and the load necessary to turn the pinion shaft is measured. If the load required is not within the limit of 12 to 18 inch pounds, it

will be necessary to remove the flange, press the pinion out of the cage and remove the spacer. The thickness of the old spacer is checked with a micrometer. Spacers and shims of varying thicknesses are available making it possible to select the spacer and shim combination necessary to either tighten or loosen the bearing adjustment.

When the correct torque load is obtained by the insertion of the correct combination of shims, the universal joint flange is removed and a new oil seal is soaked in engine oil and installed with a driver, the free edge toward the bearing. Finally, the joint flange, nut and washer are installed and the nut is tightened to between 300 and 400 foot pounds when a slot in the nut lines up with the cotter pin hole in the shaft. The cotter pin is installed without backing off the nut.

Disassembly of the double reduction shaft is begun by removing the lock wires from the double reduction shaft bearing retainer washer cap screws and removing the screws and washers. Then, supporting the tooth side of the ring gear on hardwood blocks, the reduction shaft is pressed out of the ring gear and bearing with an arbor press. This is followed by removal of the high speed pinion, shifter sleeve, shifter sleeve lock poppets and spring, care being taken to catch the poppets and springs as the sleeve is removed.

The shifter sleeve is then placed back on the shaft, properly sup-  
(Continued on page 74)

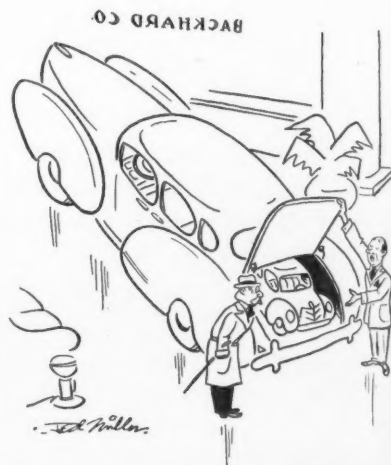


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**MARTIN-SENOUR** *Automotive Finishes*



## Two Speed Axle . . . . (Continued from page 72)

ported on an arbor press, and the shaft is pressed out of the bearing at the low speed end of the shaft. The low speed pinion and shifter sleeve are removed last.

All parts are thoroughly cleaned and inspected for damage or wear and all damaged or worn parts should be replaced. The double reduction shaft left bearing cap is serviced only with the outer race

in its normal position on the axle.

The first step in the reassembly of the double reduction shaft is lubricating the pinion gear seats with hypoid lubricant.

The high speed pinion is placed on the long end of the shaft with the end of the pinion having the clutch teeth toward the splines on the shaft. The ring gear key is placed in the shaft keyway and

the ring gear is started on the shaft and pressed down against the shaft shoulder. The tapered roller bearing is installed and pressed down against the gear. The bearing retainer washers and cap screws are installed, tightened to 37 to 46 foot pounds torque and wired.

The springs and poppets are placed in their respective holes in the shaft. The space on the shaft between poppets having but four teeth, and the space between the tapered teeth on the shifter sleeve having but three splines are located. See Fig. ?? The sleeve is then placed on the shaft with the heavy tapered end of the sleeve toward the ring gear, the tapered teeth on the shifter sleeve are mated with the poppets, and the poppet springs are compressed and the sleeve forced into position.

The low speed pinion is placed on the shaft and the bearing pressed down firmly against the shoulder. The shaft bearing retainer washer and cap screws are installed and the screws tightened to 37 to 46 foot pounds torque and lock wires installed.

Before the differential is disassembled the two halves of the case should be marked for reassembly. The tie wires are then removed from the case bolts, the long bolt nuts and bolts are removed, and the two halves of the case separated and the side gears, pinion gears, spider and all thrust washers removed.

(Continued on page 76)



Physical-fitness is a vital "dimension" in an automotive ball bearing when it has a heavy-duty job to do. And it calls for the right degree of resilience, toughness and resistance to compression and distortion... with no sacrifice of precision.

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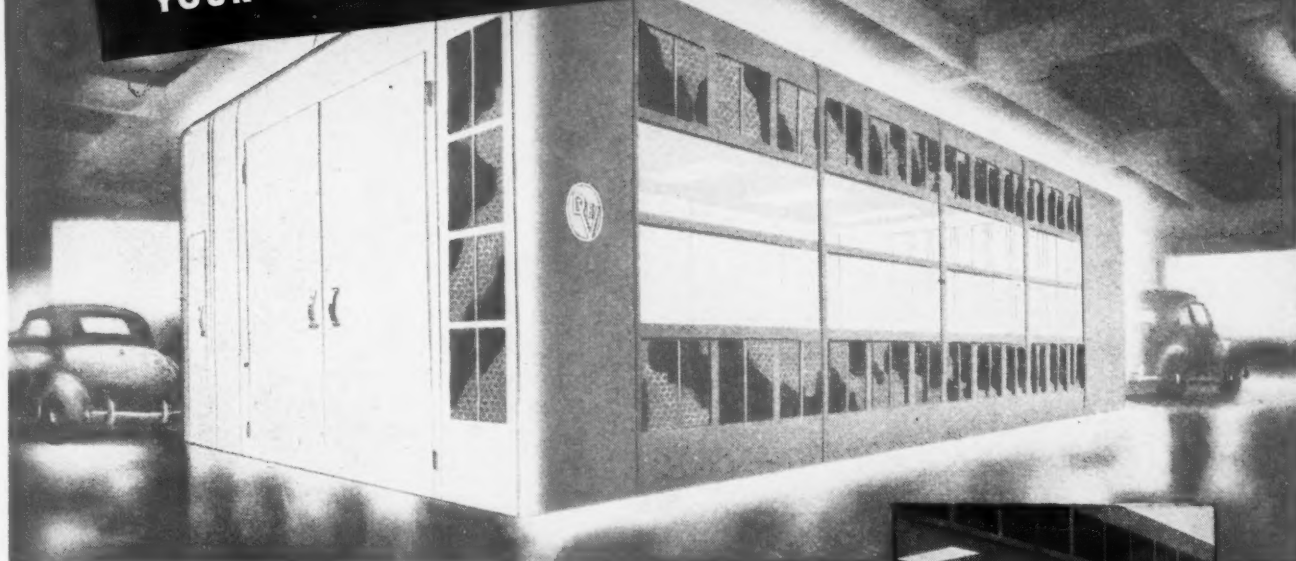
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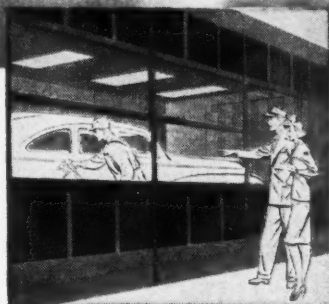
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*means Quality in all four..*

SPRAY EQUIPMENT  
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AIR COMPRESSORS  
HOSE & CONNECTIONS

## Two Speed Axle . . . (Continued from page 74)

All parts are washed and inspected. Special attention should be paid to looseness of the reduction gears in the case, excessive wear at the case half thrust washer seats and excessive wear in the side bearings. The thrust washers should be inspected for wear and the spider for worn or scored pinion bearing area. Damaged or

worn parts should be replaced or, where possible, repaired.

A differential side bearing can be replaced by clamping the two halves of a differential bearing puller around the bearing and supporting the case in an arbor press with the bearing puller down. A drift can be put through the case and the bearing pressed off. A new

bearing is then placed on the case and pressed down against the shoulder on the shaft.

Replacing a double reduction gear on either half of the case necessitates removing the retaining bolt nuts and bolts and tapping the gear off the case. The mating flanges of the case and the new gear are cleaned, and the new gear is started on the case, using bolts to line up the holes. The gear is tapped into place, the nuts are installed and tightened to a torque load of 70 to 110 foot pounds, and the nuts are locked with wire.

In reassembling the differential, the thrust washers, side gear hubs, pinions and spider are lubricated and assembled in one side of the case. The other half of the case is then placed in position so that the identification marks previously made line up and the case through bolts are installed. All nuts are tightened to a torque load of 70 to 110 foot pounds and the tie wires are installed.

The first step in installing the pinion cage and reduction shaft, is the installation of the double reduction shaft bearing outer race in the right side of the carrier, with which it should be tapped flush. The left end of the reduction shaft is then started into the carrier from the differential end and out through the left side of the carrier. New gasket and shims are installed on each side, using the same number and thickness shims that were removed when disassembling, and the bearings caps are put in place. Three lockwashers and nuts, evenly spaced, are installed on each cap and tightened securely.

(Continued on page 80)

*New Wilson  
"Busybee"*



### Your Best Bet For Faster General Purpose Garage Welding—at Lowest Cost

The NEW Wilson "Busybee" A.C. arc welder is fast becoming "first choice" among garage operators and owners. It is ideal for automotive and farm implement welding, and is known for its penetrating, stinging arc. Five definite "reasons" explain the "Busybee's" popularity:

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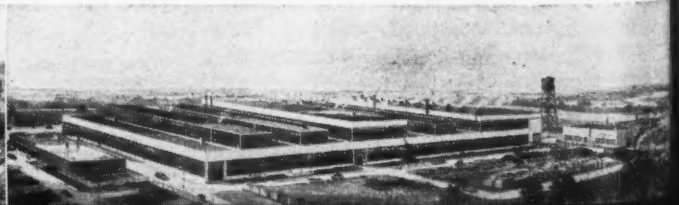
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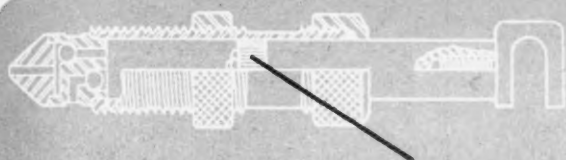
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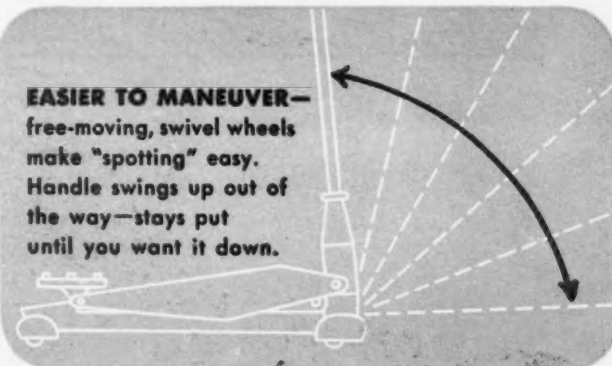
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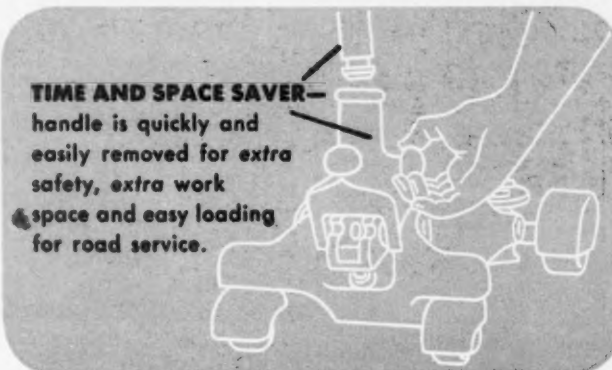
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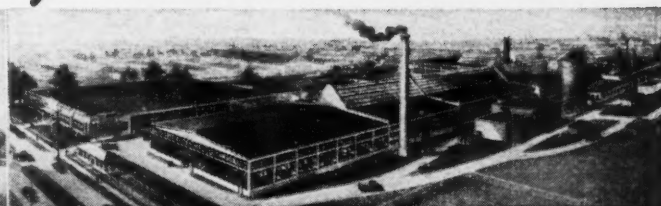
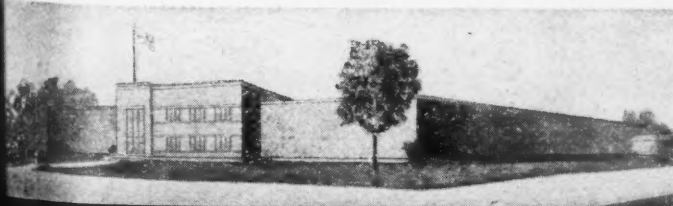


**TOUGHER, LONG LIVED**—fully enclosed power unit means long life, trouble-free service. No exposed springs to snag or snap.

**TIME AND SPACE SAVER**—handle is quickly and easily removed for extra safety, extra work space and easy loading for road service.



## Mechanical and Hydraulic JACKS



**FACTORIES:** St. Joseph, Michigan; Benton Harbor, Michigan; Hartford, Michigan; Windsor, Ontario, Canada



## Two Speed Axle . . . . (Continued from page 76)

The bearing adjustment should be checked at this point. Correct adjustment of the double reduction shaft bearings will produce a slight drag when the shaft is turned by hand. Correct adjustment can be obtained by adding or removing .003 in. or .005 in. shims on either side.

A new pinion cage gasket and the same number and thickness of

shims that were removed when disassembling are placed on the pilot of the pinion cage and the cage is assembled to the carrier. Three lockwashers and nuts, evenly spaced, are installed and securely tightened.

Pinion depth adjustment is made by removing the pinion cage and adding shims between the cage and the carrier if the pinion is too deep,

or removing shims if the pinion is too shallow.

Backlash is checked by using a dial indicator on the heel of a ring gear tooth. Correct backlash is from .008 in. to .013 in. If the backlash is insufficient, the double reduction shaft bearing caps should be taken off and a shim removed from the left side and a shim of the same thickness added to the right side. If the backlash is excessive, a shim should be removed from the right side and a shim of the same thickness added to the left side. These adjustments should be continued until the backlash is within proper limits. By following this method proper adjustment of the double reduction shaft bearings is maintained.

The remaining washers and nuts are installed at each reduction shaft cap and the pinion cage, and the shaft cap nuts are tightened to a torque load of 75 to 95 foot pounds and the pinion cage nuts to a load of 115 to 130 foot pounds. Finally, the pinion cage lubrication plug is installed.

Before the vacuum shift mechanism can be installed, the reduction shaft shifter sleeve must be shifted into the low gear position. The shifter fork is then placed in the shifter sleeve with the lock bolt hole toward the rear of the carrier. The rubber oil seal is placed over the vacuum unit mounting sleeve, shims of the same thickness as were removed when disassembling

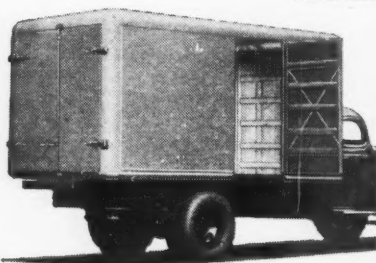
(Continued on page 83)

## OLTMAN-O'NEILL "Cargo-Tested" ALL-STEEL TRUCK BODIES

Mass Produced for Economy and Volume Orders

*Dealer Franchise Available*

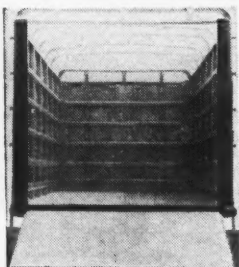
Oltman-O'Neill Company Still Has Some Choice  
Territories Open



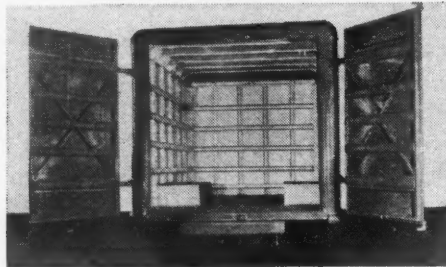
Standard Van with side door



Wheel House Model (9' lower)



Open top with tailgate



New "X"-Braced Doors

### MANY MODELS

9-12-14-16 foot lengths . . . inside measure in Standard vans or Wheel House Models. Built to specifications for side doors, tailgates, double rear doors, or  $\frac{3}{4}$  doors over tailgate, called "Dutch" doors.

### TOP QUALITY

All-steel . . . All-welded . . . Rigid grid frame . . . Leakproof steel roof or open top . . . Nonskid steel floor. New "X"-braced doors . . . "Full length" interiors... "Equal clearance" Wheel Housing . . . Smooth sides . . . Painted to match cab and chassis.

Sold by Truck and Equipment Dealers

Ask us about  
open territories  
today

**OLTMAN-O'NEILL Co.**

5171 Martin Ave.  
Detroit, 10, Mich.  
TA. 5-8502

"TRUCK BODIES THAT PAY—ALL THE WAY"

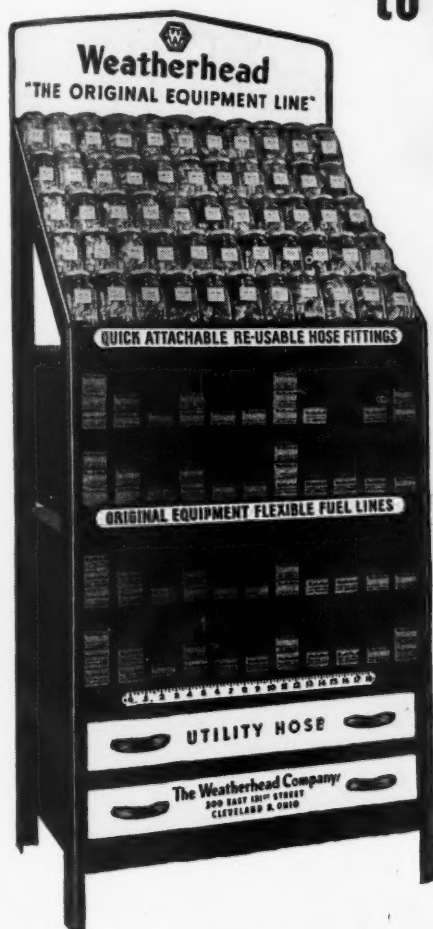


"I'll bet you say that to all the girls."

# It's new!



## A hose and fitting selector to help your jobber serve you better



New Weatherhead Unit makes it handy and quick to select the right gas, oil or vacuum fuel line or re-usable hose fittings and hose for practically every make of car, truck or bus.

This new Weatherhead Display Unit will soon be seen in your favorite jobber's store. These units speed up service to you on your fittings and hose line requirements.

Handy "How to Make Up" charts in the new Weatherhead catalog simplifies your selection of the correct gas, oil or vacuum line you will need.

All of these re-usable hose fittings are designed to be used with over 90% of your replacement parts requirements.

This self-service, time-saving unit will help your jobber improve his service to you as well as furnishing you in one unit a comprehensive selection to fit every requirement.

So, when you see this new Weatherhead unit on your jobber's floor, you can be sure he's progressive . . . that he's utilizing the newest methods to improve his service to you, as well as supplying you with the best replacement parts obtainable.

*Weatherhead Automotive Products include: Drain Cocks, Dash Controls, Fittings, Hose and Fuel Line Assemblies.*



*Look Ahead with*

# Weatherhead

THE WEATHERHEAD COMPANY • CLEVELAND 8, OHIO

CLEVELAND • NEW YORK • DETROIT • CHICAGO • ST. LOUIS • ATLANTA • DENVER • LOS ANGELES

## HERE'S THE WORLD'S SHORTEST SALES TALK



Look at the Condition of Your Oil

Only Clean Oil is Safe Oil

AC OIL FILTER Keep Oil Clean

AC OIL FILTERS

**AC**

**OIL FILTERS**

One look at the oil smear on an AC Oil Test Pad tells a customer why he needs an AC Oil Filter or Element—shows him the dirt and grit that clog ring slots and valve stems, waste power and hasten repair bills.

That's why you should test engine oil every time you check it. Just wipe the dipstick on an AC Oil Test Pad, instead of on a rag. Then show the smear to your customer.

Every Official AC Oil Filter Service Station is supplied on request with AC Oil Test Pads. If you are registered, keep a supply of Test Pads on hand. If you are not registered, sign up now through your AC wholesaler, stock AC Filters and Elements, and these Test Pads will be sent to you.

**SEND FOR AC SHOP MANUALS** MA-8

Field Service Department, AC Spark Plug Division, General Motors Corp.  
910 Mott Foundation Building, Flint 3, Michigan

Gentlemen: Please send at once, no charge, the AC Shop Manuals checked:

<input type="checkbox"/> How to Service Spark Plugs	<input type="checkbox"/> How to Service Fuel Pumps
<input type="checkbox"/> How to Service Spark Plug Cleaner	<input type="checkbox"/> How to Service Air Cleaners
<input type="checkbox"/> HOW TO SERVICE OIL FILTERS	<input type="checkbox"/> How to Service Speedometers
<input type="checkbox"/> How to Service Ammeters and other Instruments	

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



## Two Speed Axle . . . . . (Continued from page 80)

are installed over the studs in the carrier, and the mounting sleeve is installed.

A new gasket is placed over the piston rod and the rod and cylinder assembly are started into the mounting sleeve. The piston rod is turned to line up the hole in the rod with the hole in the shifter fork. The end of the rod is entered into the shifter fork, the hole in the rod is lined up with the hole in the fork, and the fork is installed on the piston rod tapered bolt and the lock nut secured. The cylinder to carrier nuts and lockwashers are installed and tightened.

With the shifter sleeve in low speed position, clearance on each side of the shifter fork is checked with a feeler gauge. There should be at least .010 in. clearance on either side, the cylinder and mounting sleeve attaching bolts should be loosened and shims added or removed to obtain proper clearance. The bolts are then tightened and clearance is re-checked for both low and high speed positions.

To install the differential, the bearings are lubricated, the outer races are assembled and the assembly is installed in the carrier. The adjusting nuts and caps are assembled, making sure that the cap and adjusting nuts are installed according to the marks made when disassembling and that the adjusting nuts are not cross-threaded. The bearing cap bolt nuts are tightened just "snug."

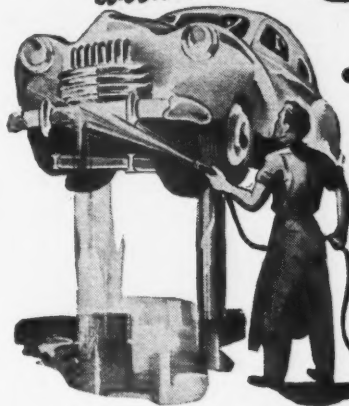
The position of the double reduction gears with the double reduction pinions is checked. The

differential is moved by turning the adjusting nuts until the double reduction gears line up with the double reduction pinions. One nut is stopped in a locking position and the bearings are adjusted by pulling the other adjusting nut up tight, then backing it off one notch to a locking position. The bearing cap bolts are tightened to a torque load of 150 to 170 foot pounds and

the adjusting nut locks are installed and the cap bolt nuts locked with tie wire.

To install the differential carrier, a new gasket is placed on its flange and it is rolled into position under the truck with a roller jack. The carrier is pushed back until the flange is against the axle housing. the bolt holes are lined up with a taper punch and cap screws are installed near the top. The housing bolts are then installed and tightened. The universal joint is re-

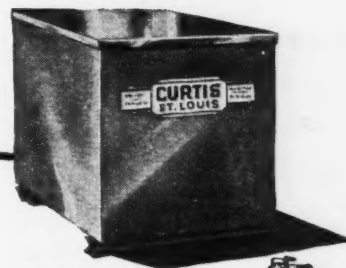
*Cleaner Jobs  
in less time  
with the*



*Here's  
Why*

# CURTIS

## • HYDRAULIC • CAR WASHER



SILENT V-BELT DRIVE

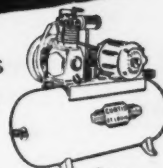
SELF-OILING PUMP

DOUBLE ACTING SLOW SPEED 1 AND 2-GUN MODELS

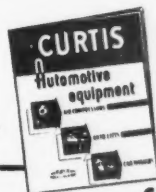
4 SIZES—1 TO 3 H.P.

TIMKEN BEARINGS

BRASS LINED CYLINDERS



Curtis  
Air Compressor

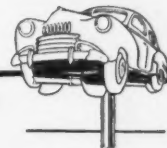


Proven design—built by the pioneer car washer manufacturer.

For full information write for Bulletin C-6.

**CURTIS PNEUMATIC MACHINERY DIVISION**  
of Curtis Manufacturing Company

1946 Kienlen Avenue • St. Louis 20, Missouri



Curtis Hydraulic  
Auto Lift

### 93 Years of Successful Manufacturing

E-541A

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Company  
1946 Kienlen Avenue, St. Louis 20, Missouri

Please send me your Literature Kit C-6, which includes bulletins on Curtis Air Compressors, Curtis Auto Lifts and Curtis Car Washers.

Name.....  
Firm.....  
Street.....  
City..... Zone..... State.....



"Oh, Mr. O'Brien, may we have a word with you?"

connected, and the vacuum hoses replaced and clamped securely.

All lubricant is cleaned from the ends of the hubs and axle shaft flanges, new gaskets are installed and the shafts pushed into place. The axle flange bolts and lockwashers are installed and tightened to 85 to 95 pounds torque. The inspection plate is installed with a new gasket and the differential filled with 14½ pints of SAE 90 "All-Purpose" gear lubricant.

The pipe plug in the pinion cage

is removed and the space between the pinion bearings is filled with 1 pint of SAE 90 "All-Purpose." Finally, the rear universal joint is lubricated.

### Willard Promotes Somers

The Willard Storage Battery Company announces the appointment of Frank R. Somers to the position of Director of Merchandising, with jurisdiction over all Replacement Sales Department operations. The change is effective im-

mediately, according to C. E. Murray, Willard Executive Vice President.

Mr. Somers has been affiliated with the Willard organization for more than 30 years. Starting with the Credit Department in 1916, he became Assistant Credit Manager two years later. In 1922, he was promoted to Credit Manager of Service Station Sales. He has since served as Manager of the Better Business Department; District Sales Manager, Atlanta District; District Sales Manager, Cleveland District, and Replacement Sales Manager.

### Weatherhead Promotes Robers to Sales Manager

Gene P. Robers, Advertising and Sales Promotion Manager of The Weatherhead Company, has been promoted to Sales Manager of the Replacement Parts Division, it was announced today.

Robers' new duties, in addition to his duties as Advertising and Sales Promotion Manager, will place him in charge of all industrial, aviation and automotive replacement sales.

During the past five years he has held full responsibility for advertising, sales promotion, public relations, publicity and merchandising.

Robers is conversant with the sales promotion problems of the automotive jobbers having served as a director of the Automotive Advertisers Council for the past three years. He is president of the Industrial Marketers of Cleveland, a director of the National Industrial Advertisers Association, and a member of the Cleveland Export-Import Association, Cleveland Advertising Club and Cleveland Chamber of Commerce.

**5 REASONS WHY IT PAYS TO REPLACE WITH**  
*genuine Johnson* TAPPETS



- Finest steel heat treated for maximum strength and hardness.
- Holes for spanner which keeps tappet from turning when adjustment is being made.
- JOHNSON Self-Locking Screw maintains accurate adjustments.
- Body of special quality iron for strength and lightness.
- Hard chilled face for long wear.

Yes, and there's profit in replacement with JOHNSON Tappets! For Ford and Mercury V-8's it's the JOHNSON Adjustable Tappet (shown above). . . . For other popular makes of cars and trucks Genuine JOHNSON Replacement Tappets are also available.

DISTRIBUTED TO N. A. P. A. JOBBERS  
By BALKAMP, Inc. of Indianapolis  
CALL YOUR N. A. P. A. JOBBER TODAY

**Johnson** PRODUCTS INC.  
MUSKEGON, MICHIGAN  
*"Tappets Are Our Business"*



"Why can't you come right out and say you want Scotch?"

For Oil Control, also...



..... NOT 2



NOT 6.....



..... but **26**  
basic designs

## OF SEALED POWER PISTON RINGS

including the most efficient sectional steel oil ring ever built—the MD-50

OIL CONTROL is necessary to balanced performance in piston rings. There can't be any question of that. But equally important are blow-by control, low friction, and minimum wear. It takes ALL FOUR to achieve the BALANCED PERFORMANCE that means a good job. And you get all four when you use Sealed Power Individually Engineered Ring Sets, made up from twenty-six (26) basic designs of piston rings. Whatever the make, model, or cylinder wear condition, there is a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for eight years, has been producing rings for car, truck and engine builders 36 years. For best results, re-power with Sealed Power motor parts. Sold by leading distributors. Sealed Power Corporation, Muskegon, Michigan, and Stratford, Ontario.

*Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts*

# SEALED POWER PISTON RINGS

BEST IN NEW CARS! ★ BEST IN OLD CARS!



INDIVIDUALLY ENGINEERED

One of the 26 basic rings is the famous MD-50—the finest sectional steel oil ring ever built. The MD-50 has a cast iron spacer with an exclusive tapered channel design which assures better oil drainage and prevents clogging.





## Rebuilt Motors . . . . . (Continued from page 40)

company has a capacity of 50 rebuilt motors per day and is doing a quality job that C. J. Fournier, of the parts and service department of the Ford Motor Company, Dearborn, described as equal to that produced at Dearborn before the Ford Motor Company abandoned its own motor rebuilding department in 1940.

The Northern Motor Company, parent company of the Northern Motor Rebuilders, has been authorized parts distributor for the Ford Motor Company in the Upper Peninsula of Michigan for a number of years. In selling to the dealers in this area, the need for a motor rebuilding service in the territory became apparent and

prompted the Northern Motor Company to add the motor rebuilding department to its Escanaba garage.

The company was appointed an authorized motor rebuilder by the Ford Motor Company late in 1945, and was allocated the territory of the Upper Peninsula of Michigan and the northern half of Wisconsin, embracing 134 authorized Ford agencies.

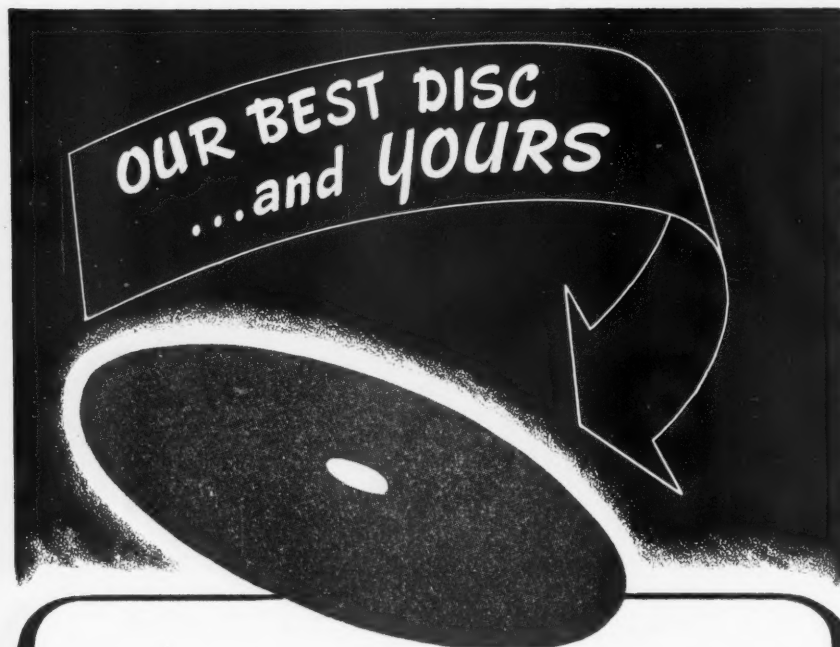
Four large semi-trailers are used to transport the rebuilt motors to the dealers and to pick up old motors for rebuilding. Rebuilt motors are sold on an exchange basis only. The truck service covers the entire territory every two weeks.

Rebuilt motors are sold on a standard guarantee, 30 days or 4000 miles service. New parts installed in every motor include pistons, rings, pins, connecting rod bearings, main bearings, valves (eight new, eight reconditioned), valve springs, locks and guides, oil relief valve and plunger, camshaft bushings, timing gear and head gaskets.

When an old motor is received at the factory, it is promptly given a number which is stamped permanently on the block. The motor is thoroughly cleaned of sludge and dirt in a cleaning machine, immersed and agitated in a chemical solution at 210 degrees for 15 minutes.

The motor is then dismantled and all parts placed in a hot dip machine for cleaning and steam flushing, while the motor block is returned to the chemical bath for

(Continued on page 88)



### SPEED-WET\* METALITE

All-Resin Bonding • All-Durabonded Coating  
All-Fibre Backing • All-Out Performance

To a veteran disc man, the three improvements which distinguish the new Speed-wet Disc mean substantially increased grinding performance. All-resin bonding, for instance, gives resistance to heat and loading. The all-fibre backing contributes spring-like flexural strength. The Durabonded\* coating provides stamina and rugged grit anchorage. Taken all together, this three-fold improvement yields a disc of vastly improved cutting-speed, finishing properties and long life.

In fact, never before have so many people expressed so much praise for any disc we ever made. That's why we say, "Our best disc—and yours!"

Ask your Jobber to furnish Speed-wet Discs next order.



**BEHR-MANNING**  
(DIVISION OF NORTON COMPANY)  
TROY, N. Y.

\* Reg. U. S. Pat. Off.



"I don't trust locks so I just take some part of the motor so no one will steal my car."

# *Harmonize* YOUR SELLING EFFORTS

with  approved

## International Parts Mufflers

SUPER SILENCING

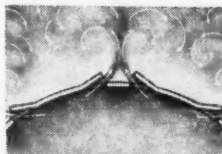
YOUR KEYNOTE TO VOLUME SALES and PROFITS

#### CONTINUOUS ELECTRICALLY WELDED SEAMS



fuse the metal into a solid bond that cannot blow out. These Mufflers are therefore guaranteed unconditionally against blowouts and leakage.

#### PATENTED "DUO-LOUVRE" CONSTRUCTION



stirs up the gases in such a way as to break up the sound waves, resulting in super-silencing. Cuts down back pressure and prevents formation of clogging carbon.

*Write for Muffler Reference Catalog - - 140 Pages of Complete Data*



**International Parts Corp., CHICAGO 5, U.S.A.**

INTERNATIONAL PARTS (CANADA) LTD., TORONTO

A Complete LINE OF QUALITY AUTOMOTIVE REPLACEMENT PARTS

## Rebuilt Motors . . . . . (Continued from page 86)

further cleaning before inspection.

If the motor block is free of cracks or other defects, it is sent to a multi-boring machine, specially constructed for V-8 motors to rebore four cylinders in one operation. The rebored block is given another hot rinse to remove all machine cuttings, after which it begins its ride on the assembly line.

Camshaft bushings are installed by means of an automatic press which installs three bushings at a time. Camshaft, gears and crankshaft are installed, after which the valves are installed with an automatic valve machine. The pistons and pins are assembled and the cylinder heads installed. The motor then is given a new paint job be-

fore being tested for 25 minutes under its own power on a dynamometer.

Crankshafts are reground to standard Ford sizes on automatic, precision crankshaft grinders.

New red reconditioning machine tools, recently installed at the plant, specially designed for the Northern Motor Rebuilders, are regarded by machine experts as the most advanced equipment of its kind available in the country. All rods are of the same weight and length and the machines do not press or change the shape of the rods being reconditioned.

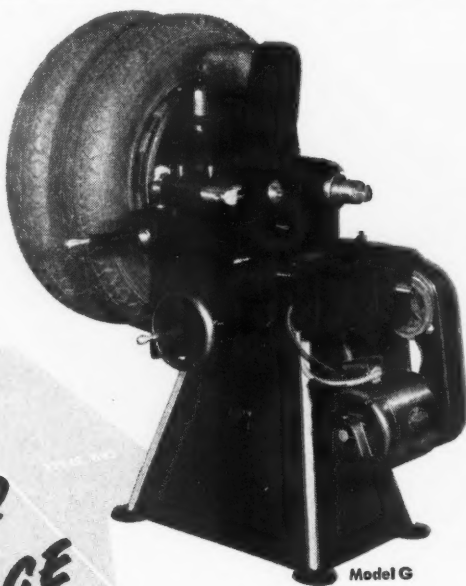
The Northern Motor Rebuilders produces rebuilt engines for all models of Ford V-8's, 85 and 100 hp, 60's, four cylinder tractor motors, four cylinder Model A and Model B motors. The company does crankshaft regrinding for other makes of automobiles and distributes crankshaft assemblies for Ford motors.

Clutches, pressure plates, carburetors, fuel pumps and distributors also are reconditioned at the Escanaba plant.

Most of the company's production is marketed through the Ford dealer setup, with the cooperation of the Ford Motor Company and with truck salesmen doing the selling job on the road. All of the Ford dealers of the territory were guests of the Northern Motor Rebuilders at the two-day open house inspection program in Escanaba in April, attended also by prominent officials of the Ford Motor Company.

The Northern Motor Rebuilders ships motors to Montgomery Ward  
(Continued on page 90)

**A  
PROFITABLE  
SPOT  
in any shop . . .**



**YOUR  
GARAGE**

**is the space occupied by**

### **A LEMPCO BRAKE DRUM LATHE . . .**

A Lempco Brake Drum Lathe occupies only a small space. Yet it will enable you to show a big increase in brake service profits.

Model G, shown here, requires a space 40" x 60" for operation. But with this efficient Lempco Brake Drum Lathe you can turn or grind all brake drums . . . for passenger cars, trucks and busses . . . which weigh about 600 pounds with wheels and tires. This means greater profit opportunities because you can service all but the very largest jobs.

The lathe shown is just one of several made by Lempco. Larger and smaller models are available. One of these is sure to meet the exact needs of your shop.

All Lempco Brake Drum Lathes are easy to operate. Any novice can quickly learn to do a perfect job. Only one set-up required to turn then grind brake drums to a satin-smooth finish.

For complete details on Model G and all other Lempco Brake Drum Lathes, write for illustrated catalog.

**LEMPCO**

**5727 DUNHAM ROAD  
BEDFORD, OHIO**



**"Is it a buyers' market yet?"**



When you're  
glad you have a  
**Snap-on**  
-tensioning spark plugs

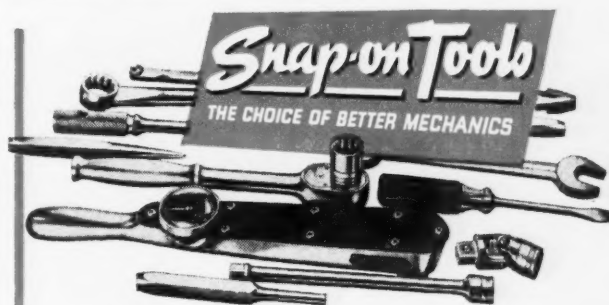
**Snap-on** Torqometers eliminate guesswork

... you can see the applied torque ...

**I**MPROPER tensioning means dangerous distortion . . . stresses . . . strains. There is *only one way* to correctly tension a spark plug, a stud, or a bolt . . . and that way is to *know* the tension . . . accurately . . . as you tighten.

Snap-on Torqometers make precision tensioning a simple operation. Even the less skilled worker can hit the specified pressure . . . right to the correct inch or foot pound. Simply set the dial at the tension required and tighten until the pointer reaches zero.

Sizes available from zero to 30 in. lbs., up to 2,000 ft. lbs. Available through Snap-on's nationwide, direct-to-user tool service.



**SNAP-ON TOOLS CORPORATION**  
8036-F 28th AVENUE, KENOSHA, WISCONSIN  
International Division: Kenosha, Wisconsin, U. S. A.

## Rebuilt Motors . .

(Continued from page 88)

stores in Minnesota, Wisconsin, Michigan, Iowa, Nebraska, North and South Dakota, Illinois, Wyoming and Montana. Recently the company negotiated a contract with the American Railway Express to provide rebuilt engines for Ford trucks operated by the express company in five middle west states. Sales also are made to independent dealers.

### Skilsaw Enters Pneumatic Tool Field with New Line

Skilsaw, Inc., of 5033 Elston Ave., Chicago 30, Ill., has announced its entrance into the pneumatic tool field with a new line of 28 models. These include pneumatic hammers, drills, screwdrivers, nut runners and die grinders. These pneumatic units will be produced at Skilsaw's new plant in Aurora, Ill., while the Chicago plant will continue to produce the regular electric Skilsaw line.

The pneumatic tools introduced are designed to be compact and light, with no model longer than 7¼ in., or heavier than 2¾ lbs. Incorporating six ball bearings, these tools have heat treated alloy steel gears and shafts. Optional speeds of 800, 1300 and 2100 rpm are available for the runners and drivers, while 800 to 10,500 rpm are available for the drills. The grinders are obtainable in three models, intended for die grinding,

burring, rotary filing and use with wire size drills.

### Self-Flaring Fittings

The Everhot Products Co., 2001-5 W. Carroll Ave., Chicago 12, Ill., is now marketing a new type of self-flaring fitting called the Everseal.

Everhot describe the new product as leakproof and self-flaring and capable of withstanding a pressure

of more than 8600 pounds per square inch. In operation, the end of the tubing is forced into an annular recess of the fitting by the sleeve end of the nut and extruded into a thirty-seven degree flare by the tightening of the nut. It is further claimed by the manufacturer that a stock of ten types of Everseal connectors and one Everseal nut, in the sizes in general use, will replace many of the stock items usually kept on hand.



"Yeah, she's here . . . upstairs putting the bait on the trap."

# TRIMWHEEL

beautifies, covers entire wheel



PATENTS  
PENDING

chrome hub cap

white wheel trim

one piece  
trim wheel

## Wid's of Windsor . . . (Continued from page 53)

Wid's introduced the merchandising plan to the public with a teaser advertising campaign which consisted of a series of 40 line ads which appeared almost daily for a month. At the end of this time a 200 line advertisement appeared in the press which explained the teaser heading: "Something New is Coming to Wid's." The day after the main ad broke, the store had more

customers and did more business than at any time since its founding.

The firm has a small trade mark character of a miniature man with a "W" on his chest. This identifying trade mark appears in all advertising, often in window displays and throughout the store.

The store reports that about 50 per cent of the customers save

their slips and make a point of buying whatever they need at the store. Sales have shown a healthy increase, both from the standpoint of new customer business, and increased purchases from old clients.

### Presto Tire Demounter

A tire demounter, known as the Presto Model B-1, has been placed on the market by the Lee Engineering Co., Pawtucket, R. I.

The manually operated unit incorporates the Simplex-Jenny Cen-

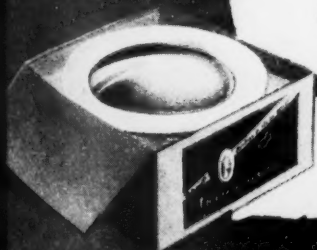
# The Sensation of the year

only two stock numbers • they fit practically all cars

**TRIMWHEEL** is something new, different, beautiful... something every car owner wants and needs. For TRIMWHEEL gives distinctive, streamlined beauty to every car . . . conceals wheel structure, improves the new car—modernizes the old. Made entirely of heavy gauge steel, TRIMWHEEL consists of double-coated, white baked enamel wheel trim, and gleaming hub cap heavily chromium plated to car manufacturers' specifications. The complete *one-piece* TRIMWHEEL unit snaps on or off freely, holds securely, retains its shape, and cannot be injured by abuse or tire blow-out. Minimum inventory—two stock numbers serve practically all cars, new or old. The product sensation of the year—adds sparkle and style to any car—enhances its value. Attractively packaged—four TRIMWHEELS, retaining rings, Schrader valve stem extensions, all ready for quick installation.

*Only two stock numbers*  
TW-15 FOR 15" WHEEL TW-16 FOR 16" WHEEL

**minimum inventory  
maximum turnover**



## Autopart

MANUFACTURING CO.

1712 S. MICHIGAN AVE., CHICAGO 18, ILL.



ter-Hole Hydraulic Jack which develops over 60,000 lbs. pulling pressure. It is adjustable to demount any size tire from 7.00 x 15 to 24.00 x 24 on trucks, buses and heavy vehicles. Construction is entirely of steel. The Presto B-1 Demounter is portable and does not require any source of electricity or air.



"Looks like the old man's wife found out about that dame in Honolulu."



# Super-



# safe

PSST!  
HEY!



Here are facts about **Super Pyro Anti-rust Anti-freeze** that made millions of motorists in 1946 stop, look, listen and buy — facts that will have them back buying even *more* this year . . .

- 1) **Super Pyro's** new strong formula gives greater anti-freeze protection!
- 2) **Super Pyro** has strongest anti-rust protection!
- 3) **Super Pyro** offers new freedom from odor!
- 4) **Super Pyro's** retail price is only \$1.00 a gallon!

Add **Super Pyro's** high-visibility gold-and-purple can . . . a stepped-up schedule of new national advertising . . . in Collier's . . . The Saturday Evening Post — in newspapers in *your* sales area — plus new outdoor posters in a program of greater coverage than ever before!

Put it all together and you'll see why **Super Pyro** is rapidly becoming America's fastest-selling anti-freeze!

Be super-safe yourself! Call *your* jobber *quick* for *your* supply of **Super Pyro Anti-rust Anti-freeze** . . . get set for . . .

**U. S. INDUSTRIAL CHEMICALS INC.**

# Super-sales!

# Super-profits!

## Adjusting Generators . . (Continued from page 43)

that are sticking in their holders, as well as worn brushes, will prevent good contact between them and the commutator, and thus cause low or erratic output.

Inspect the commutator to see if it is worn, excessively dirty, rough, or out-of-round (Fig. 4). Where any of these conditions are found, the armature should be put into a lathe so that the commutator can

be turned down and the mica undercut as already explained. If the commutator is only slightly dirty, it can be cleaned with a piece of No. 00 sandpaper held against it with a wood stick. The sandpaper should be moved back and forth while the generator is operated; dirt or gum will be sanded off in a few seconds. Be sure to blow out all dust after the commutator is

cleaned in this manner. It is also possible to use a brush seating stone to clean the commutator. The brush seating stone is a soft, abrasive material which disintegrates when held against the revolving commutator, sanding it off and also carrying under and seating the brushes in a few seconds.

Suppose your visual inspection of the generator does not disclose the condition which is preventing the generator from producing any output. The next step would be to take the generator off the vehicle so you can use a set of test points and a test lamp on it. First, raise the grounded brush or brushes and insulate from the commutator with a piece of cardboard. Check for grounds by putting one test point on the generator insulated main brush and the other on the generator frame. If the generator is of the type which has the field internally grounded, disconnect the grounding lead. If the lamp lights, the generator is internally grounded. Find the ground by raising and insulating all brushes, disconnecting leads and checking the brush holders, armature, commutator, and fields separately.

If a grounded field is found, check the regulator contact points since a grounded field will permit excessive generator field current and possibly burned regulator contact points.

If the generator is not grounded, check the field for an open circuit by placing one test point on the field terminal (or grounded field

(Continued on page 96)

### The Hope Line for Every Storage Need

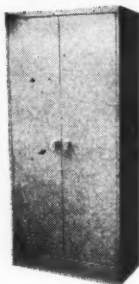
#### HOPE ALL METAL PARTS BINS

Hope all metal bins afford quick, orderly parts department expansion. They are specially designed for automobile parts departments according to the requirements of various auto manufacturers. Patented slip-in shelf dividers snap into position in 3 seconds—no bolts, clamps or screws. The special features of Hope Bins reduces parts handling time.



#### HOPE ALL METAL STORAGE CABINETS

Ideal for safe, dust-proof storage. Reduces petty thievery. Convenient for storage of costly small parts and office supplies. Holes punched on 2" centers for flexible shelf set-up. Available as storage cabinet, wardrobe cabinet or combination of both. Attractive chrome door handles equipped with tamper-proof, grooved key lock. Size: 78" high, 36" wide, 18" or 24" deep.



#### HOPE ALL METAL COMMERCIAL SHELVING

Designed for efficient handling of package or carton storage, and storage of large, cumbersome parts. Easily adaptable for display purposes. Useful for dead storage. Furnished with cross braces for extra rigidity. Can be furnished with closed vertical uprights for sides. Standard size: 36" x 12" x 84". Other sizes available.



WRITE FOR COMPLETE  
INFORMATION  
•  
Early Deliveries

Hope Metal Products Company  
1507 Rockwell Avenue  
Cleveland 14, Ohio

### MOTOR SALES





# More Profit in Carbon Cleaning!

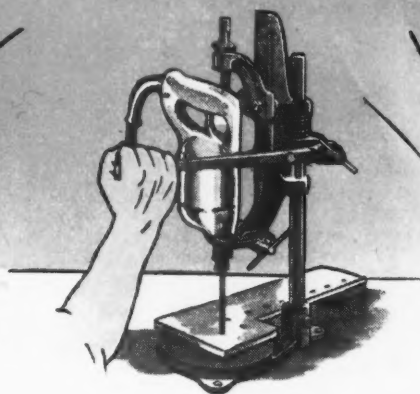
## Team Up This Versatile Drill with Carbon Cleaning Brushes!

Slick as a whistle! That's the way engine parts look after you've used a Black & Decker  $\frac{1}{4}$ " Heavy-Duty Electric Drill with Black & Decker Carbon Cleaning Brushes and Valve Guide Cleaners. That's the modern, high speed way to remove carbon from engine blocks and cylinder heads. Clean valve ports and guides. Leave a bright, burnished surface that resists new carbon accumulation. Four types of Brushes. Eleven sizes of Valve Guide Cleaners. More uses for the  $\frac{1}{4}$ " Heavy-Duty Drill shown below.



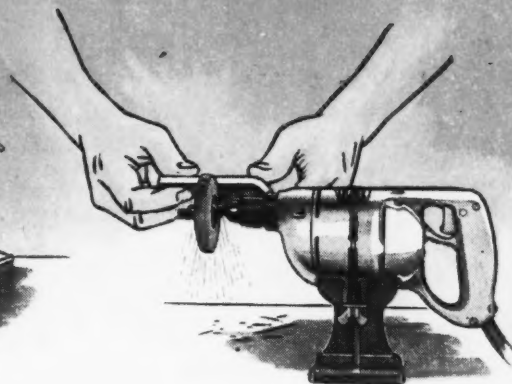
### As a Portable Tool . . .

The  $\frac{1}{4}$ " Heavy-Duty Drill drives twist drills up to  $\frac{1}{4}$ ", wood augers up to  $\frac{1}{2}$ ", Hole Saws for cutting clean, round holes up to  $1\frac{1}{2}$ " diameter in any material a hacksaw will cut.



### As a Drill Press . . .

Mounted in a Black & Decker Bench Drill Stand, this Drill makes a powerful drill press. Plenty of leverage to put on the pressure. A slow, smooth feed for more precise work.



### As a Multi-Use Tool . . .

Mounted in a Black & Decker Horizontal Drill Stand, the  $\frac{1}{4}$ " Heavy-Duty Drill does stationary drilling and reaming. Drives wheels for light grinding, wire brushing and buffing.

For Complete Catalog of more than 100 different Black & Decker Electric Tools and over 1,000 attachments, write to: The Black & Decker Mfg. Co., 627 Pennsylvania Ave., Towson 4, Md. For help on any tooling problem, see your nearby Black & Decker Distributor.

LEADING DISTRIBUTORS  EVERYWHERE SELL

# Black & Decker

PORTABLE ELECTRIC TOOLS

## Adjusting Generators . . (Continued from page 94)

lead) and the other on the brush holder to which the field is connected. If the lamp does not light, the circuit is open. An open caused by a broken lead or bad connection can be repaired; but if the open is inside a field coil, the coil must be replaced.

If the field is not open, check it for short circuits by connecting an ammeter and a battery of the spe-

cified voltage in series with the field circuit. Be careful in making this test since a shorted field will draw such a high current that it may damage the ammeter. Note the current draw of the field windings and refer to the manufacturer's test specifications to see whether or not it is correct. If it is too high, there is a short inside the coils, and they must be replaced.

Note: If a shorted field is found, be sure to check the regulator contact points since the high field current produced by a shorted field will soon burn the regulator points.

If the trouble has not yet been located, check the armature for grounds, short circuits or opens. Open circuits are usually obvious since they cause the commutator bars to burn badly. If the bars are not too badly burned, the armature may be repaired by resoldering the connections, turning the commutator and undercutting the mica as already explained. Regulator settings (or third brush position) should then be checked and adjusted as required to prevent further overloading of the generator.

The armature may be checked for short circuits by placing it in a growler. The growler is an electromagnet which is connected to a source of alternating current. When an armature with a short circuit is placed in it and slowly revolved, the short circuit will have current induced in it by the alternating field of the growler. This current induced in the short circuited armature windings will cause a secondary alternating magnetic field. If a steel strip, such as a hacksaw blade, is then held above the short circuited windings, the secondary magnetic field will cause the strip to be alternately attracted to and repelled from the armature

(Continued on page 98)

**Look at these UNITED Moneymakers!**

**12 New UNITED HYDRAULIC BRAKE ASSORTMENTS**

3 Sizes of Bulk Parts

3 Selections of Brake Hose

4 Selections of Master Kits

2 Selections for Wheel Cylinders

With these brand new United "deals" you get all the fast-moving, current hydraulic brake parts—a choice of twelve United Assortments carefully tailored to your needs . . . with helpful "at-a-glance" car application charts . . . in units designed for quick parts identification and easy replacement. Every one's a moneymaker—so get the whole story from your NAPA jobber . . . today!

**UNITED**

**UNITED PARTS MFG. CO.**  
1250 W. VAN BUREN STREET, CHICAGO 7  
HYDRAULIC BRAKE PARTS      BRAKE CABLES  
SPEEDOMETER CABLES      FUEL PUMP PARTS



"They came in for me to repair a tire and now I can't evict them for six months."





**J. E. French, Dodge Dealer, San Francisco, Calif.**

"My experience with Dodge goes back to the beginning, thirty-three years ago.

"I can't imagine a more happy and successful relationship than the one we've had with Dodge people and Dodge vehicles over every one of those years.

"With Plymouth also an integral part of the Dodge dealership, we completely blanket almost

the total market opportunity in cars and trucks.

"Anyone interested in an automobile dealership will not find any other single agreement embracing such a wealth of sales and service opportunity. There is no other, that I know of."

**DODGE • PLYMOUTH • DODGE "Job-Rated" TRUCKS**

DODGE—DIVISION OF CHRYSLER CORPORATION  
7900 LOS CAMPAU, DETROIT 11, MICH.



## Adjusting Generators . . (Continued from page 96)

core. The strip will thus vibrate, indicating that a short circuit exists.

Short circuits sometimes occur in armatures at the commutator bars because of accumulations of brush or copper dust between the bars. Thus, before you discard an armature that tests shorted, clean out the slots. Also, inspect the wires

where they cross over at the armature ends. If wires are worn free of insulation and are touching, the short can often be cleared by bending the wires slightly and applying tape and insulating varnish.

Sometimes a generator will produce an excessively high output. If it is a third-brush generator, this

may likely be due to an improperly adjusted third brush. On all generators, shorts or grounds inside the generator could cause the generator to produce too much output. As already mentioned, excessive output will cause the soldered connections at the commutator to overheat so the solder is melted and thrown out. Tracing the circuits with a test lamp and test points will soon locate the shorts or grounds. The procedure for doing this has already been discussed.

Noise in a generator may be caused by a loose mounting, a loose drive pulley, worn or dirty bearings, or improperly seated brushes. Dirty bearings can sometimes be saved by cleaning them, but they will often be so worn that they will require replacement. Bent brush holders may be preventing normal seating of the brushes and this usually requires replacement of the holders since it is difficult to bend them back into place perfectly enough to completely eliminate the noisy condition.

Normally, there will be little difficulty in disassembling and reassembling a generator. Ball bearings should be handled with care to prevent them from becoming dirty. They should be washed in clean gasoline and repacked with ball bearing grease. Sealed ball bearings, of course, should not be washed.

When removing and replacing field coils, a pole shoe screw driver and pole shoe spreader (Fig. 7) should be used since this avoids damage to the pole shoe screws and assures a tight assembly.



Lifeguarding automotive motors . . here's a rewarding business for you! Especially when it's so easy—and so profitable—to rescue customers from lubrication trouble . . just add Marvel Mystery Oil to every crankcase.

Marvel Mystery Oil protects TWO ways: First, this famous additive *dissolves* the sticky scum of sludge and gum that drowns neglected motors. Valves, rings and pump screens are stripped clean for unrestricted action. Then, Marvel follows through and *toughens* film strength—clads every vital motor part with wear-resistant armor. Even in sizzling top cylinder zones, Marvel film holds up where ordinary lubricants fold up.

Inject new pickup, pep and power into *every* motor. Add Marvel both to crankcase oil and to gasoline . . work from *both ends* of the motor for sensational results! Profits are at high tide—get in the swim **TODAY** . . order Marvel Mystery Oil from your Jobber. Emerol Manufacturing Company, Inc., 242 West 69th Street, New York 23, N. Y.

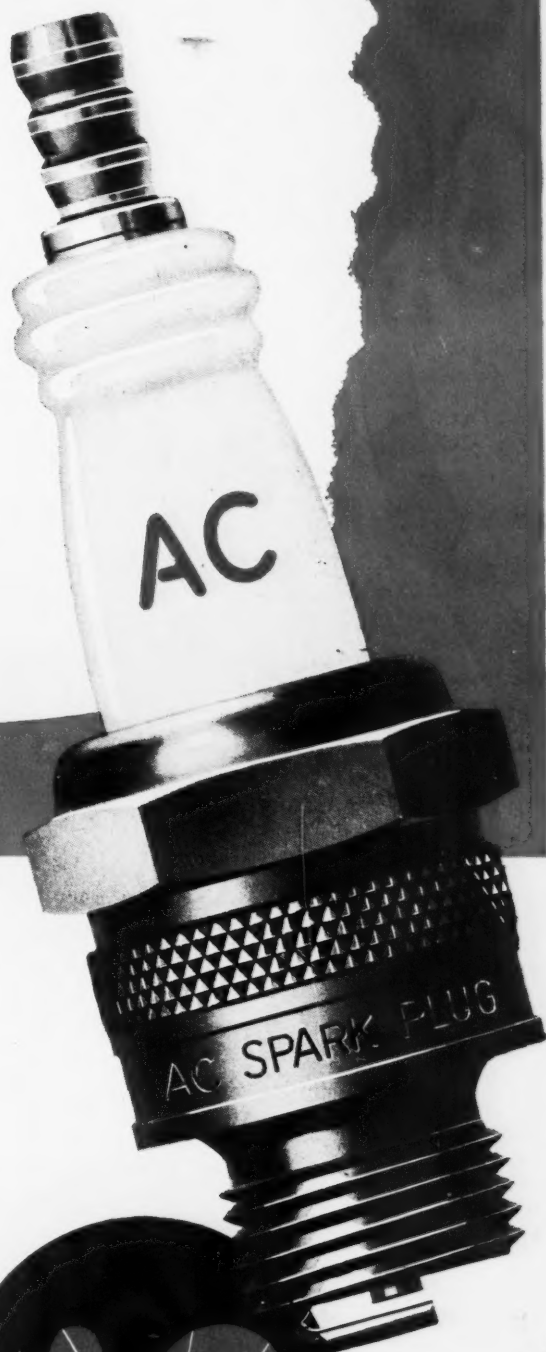
# MARVEL MYSTERY OIL



"You may come in now Mr. Brown."

# CHECK THE HEAT RANGE OF ALL PLUGS

When  
Checking Oil



Here is an opportunity! Better gas, longer mileages, and normal driving speeds call for a "cooler" type of improved AC Spark Plugs. Plugs of a Heat Range that did a job in the days of lower octane gas and slower driving are too "hot" today. They are likely to split, blister, misfire, and cause preignition.

There are millions of these "wrong Heat Range" plugs still in use. Plenty are in your neighborhood. **GET 'EM OUT!** *You'll sell new plugs!*

Check the Heat Range of *all* plugs on every car, truck, bus, and tractor that comes in for *any* kind of service. Check it against the AC Specification Chart—and be sure.

ALWAYS  
CHECK  
HEAT  
RANGE

- ★ When CHECKING OIL
- ★ When CHANGING OIL FILTERS
- ★ When RINSING AIR CLEANERS
- ★ When CLEANING FUEL SYSTEMS
- ★ When CRISS-CROSSING TIRES
- ★ On every BRAKE JOB
- ★ When CHANGING FAN BELTS
- ★ When you give a WASH
- ★ When you CHANGE OIL
- ★ When you LUBRICATE
- ★ When you SERVICE A BATTERY
- ★ When you TUNE UP and REPAIR
- ★ When CHECKING ANTI-FREEZE

# AC SPARK PLUGS

AC SPARK PLUG DIVISION—GENERAL MOTORS CORPORATION



# THERE'S MORE PROFIT

## MORE PROFIT IN THE RING LINE

The King Ring Line includes Engineered Sets, Rebores-Rebuild Sets and Service Special Sets . . . the right ring for every job, for every make and model of motor.



Rebores-Rebuild Expander Piston Rings with Iron Expander Rings.



Engineered Set Piston Rings for Re-Ringing.



Service Special Piston Rings with Steel Expanders for Dealers' Service Department.



# IN THE KING LINE!



## MORE *PROFIT* IN THE COMPLETE LINE

The complete King Line includes Pistons, Pins, Motor Bearings, Valves, Cylinder Sleeves, Water Pumps and Parts, Front End Parts and Shackles...all in one catalog from one jobber. That's real service!

# KING QUALITY

"Building for the future on a 27 year record"

SAINT LOUIS 10, MISSOURI

PISTON RINGS • PISTONS • PINS • VALVES

BOLTS • BUSHINGS • SILENT-U SHACKLES



BEARINGS • WATER PUMP PARTS

SLEEVES • WHEEL SUSPENSION PARTS

# It's The Lining That Makes The Brakes

**I**T pays in many ways to use Thermoid Brake Linings. Thermoid "CB" Brake Lining Sets are custom-built for every make of car in use today. They're the only brake linings which carry the Pittsburgh Testing Laboratory's seal of unqualified correctness.

In addition, with Thermoid you can sell car owners "Precision Processing"—the exclusive Thermoid method that enables you to duplicate new car brake performance on every reline job. "Precision Processing" makes *every* brake job "Right the first time"...eliminates the customary time-wasting, costly come-backs for adjustments.

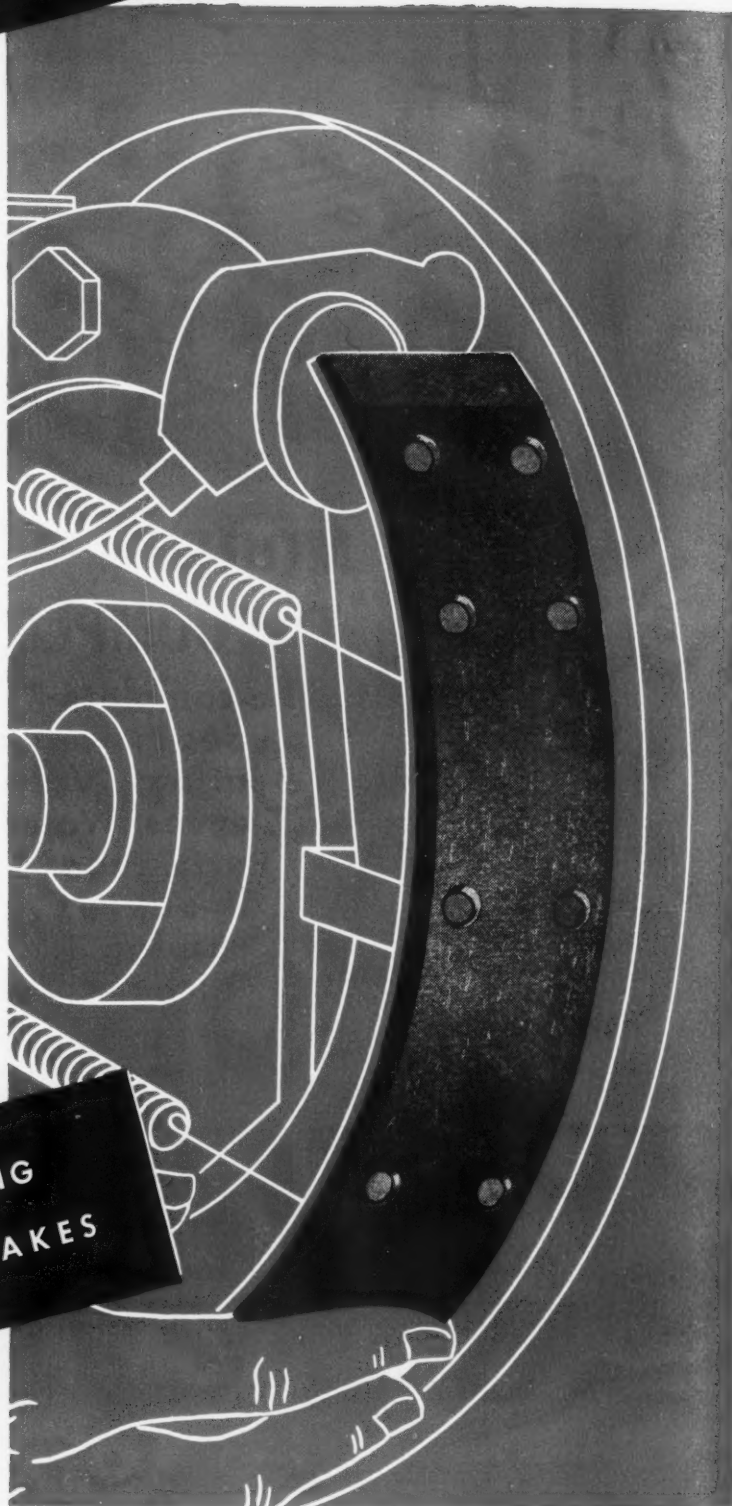
## Thermoid

Custom-Built Brake Lining Sets  
Plus "Precision Processing"  
Equals Brake Perfection

**THERMOID COMPANY**  
Trenton, New Jersey

Copyright 1947—Thermoid Company

# THERMOID • THE LINING THAT MAKES THE BRAKES



## Clean Parts . . . . . (Continued from page 59)

long to realize that the result was as though they had carefully added a measure of grinding compound during the assembly job. Wear on the new parts was excessive . . . and utterly unnecessary.

Lack of thorough cleaning, they found, led to other complications. Accurate adjustments were impossible when the parts were thumb-deep in dirt and grease. A rear-end pinion adjustment, for instance, was quite a chore when the shims were little more than slabs of caked grease.

Again, reassembly of dirty parts was a long, tough job. Slippery, unrecognizable parts that dove under the car every time the mechanic got them in position didn't make for fast or easy jobs, nor did small washers and gaskets that were buried so deep they had to be found with divining rods.

Replacement or reassembly of dirty, gooey parts had another drawback. When a customer came into the shop with a shot engine and they gave the car back to him repaired, but still wrapped in its original coat of muck and grease, he felt (and maybe with reason) that they couldn't have gone to much trouble . . . or that they hadn't touched it at all. Customers, after all, were impressed with appearance, and a clean, workmanlike job brought them back for more.

All these things are still true. Adjustment, assembly and repair are just as hard as they ever were when parts are fossilized with goo.

In the cleaning of automotive parts prior to reconditioning, two distinct kinds of dirt are encountered. One type is an accumulation of oil and grease mixed with road dirt. The other kind, much more stubborn, is carbonized oil deposit, "varnish" gasoline gum and other hard-to-remove deposits such as are found on pistons, valves, carburetors, fuel pumps, connecting rods, valve springs, rocker arm assemblies, etc.

Chemists and manufacturers in discussing the different types of cleaners refer to them as alkaline, emulsion solvent, or emulsifiable

solvent. Maintenance men are not interested in such technicalities and buy them by the brand name.

On the market today are cleaners for every job and for every price. From compact, reasonably priced chemical cleaners for the small shop, to the super-doo heavy-duty units used in the big rebuilding plants, there's a suitable cleaner for every job.

In addition to the cold-tank, chemical cleaners other methods use agitation (both of the fluid and of the parts themselves); hot tank cleaners, steam cleaners, vapor cleaners and systems that involve combinations of these methods.

Veterans of the desert campaigns in this last war have said that dirt and grit were worse enemies than the Germans. They're just as bad around home, and it's the shop that's equipped to lick them that will clean up.



## VACATION TIME IS NOXO TIME

. . . and alert dealers are taking the plunge for extra profits by adding NOXO to their customers' cars!

Noxo removes winter sludge, lubricates upper cylinder walls, releases sticky valves and gives car more pep and power, a quieter motor that uses less gas.

Be sure you are well stocked with NOXO for this profitable selling season.

SERCO  
KI-MO  
RUSGO

LUBRO  
SHAMO  
REESO

D-GRESO  
SOLVO  
NOXO

### SERVICE SUPPLY COMPANY

1115 SEVENTH STREET

DENVER, COLORADO



## Promotion Programs . . (Continued from page 41)

desire to appear on the program may do so without incurring any obligation, and the program makes its possible for influential merchants and businessmen to become acquainted with the sponsoring garage in question.

The Jackson Garage at 8101 Prospect St., Kansas City, Mo., is particularly interested in rural

trade. It has compiled a list of farms within an 80-mile radius in all directions. Each farm within this radius receives a personal message from the garage urging them to bring their trucks in for service adjustment and possible overhaul. This letter is mailed first class to each farmer and a special identification card is issued to each farmer

so that when he brings his truck in he will receive priority service. Every Saturday evening is "Open House" at the garage for farmers and members of farm families who wish to come in and get acquainted with the garage service staff. Farmers are cordially invited to bring in their cars for attention and for priority service (between 4 p. m. and 10 p. m.). In so far as it is possible, farmers are given preference in these Saturday night get-togethers. In this way cars and trucks may be serviced over a week-end if repairs are costly and made ready for the farmer bright and early on Monday morning.

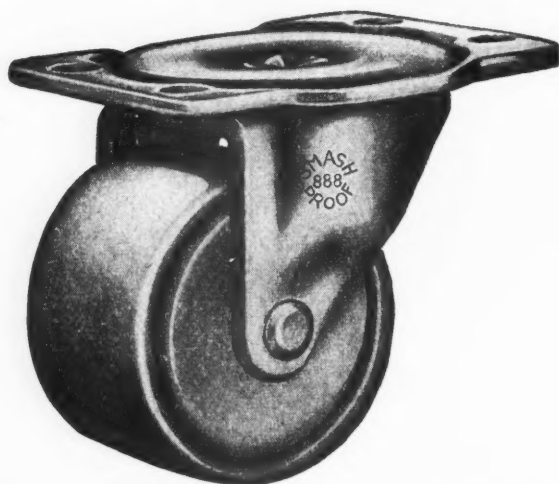
Moreover, this garage has completed a special tie-in whereby farmers are urged to write a brief account of how a truck or their personal automobile has been used to advantage on the farm and has helped to improve their farming activities in general. These personal experiences are used in a special posterized display in the garage office. The purpose of such letters is to impress upon farmers how important the family car or the farm truck is in everyday rural activity.

This garage sponsors a daily radio spot at 6.05 a. m. consisting of a weather report and road condition report especially to farmers so that they may know what roads to avoid coming into town and may know weather conditions for 24 hr. in advance. The shop also issues a  
(Continued on page 106)

# Smash-Proof

NO. 888

## CREEPER CASTERS



ARE NOW AVAILABLE AT  
ALL LEADING JOBBERS

DOUBLE THE LIFE OF YOUR  
CREEPERS BY REPLACING THE  
CASTERS WHEN NEEDED

HULBERT MANUFACTURING CO.  
ASHTABULA, OHIO



"In my house I wear the pants!"



# NOW... A PORTABLE FAST CHARGER

**WEIGHS ONLY 35 LBS.**

**75 AMP. CAPACITY • PRICE \$79.50**

Slightly Higher in Far West

The new Allen Portable Fast Charger is smaller than a battery and weighs only 35 pounds. Yet it provides complete control over both high and low charging rates. A new transformer design, pioneered and perfected by Allen, plus scientific ventilation make this a real heavy duty charger that will take day in, day out use in a busy service station or garage without overheating or burning out.

## LOWER COST, TOO

And the new Allen Portable Fast Charger costs less than any other type of fast charger. Larger shops can have several chargers so that one is always available. Smaller shops and fleet owners can have the added convenience of fast charging with an investment of only \$79.50. Slightly Higher in Far West.

SEND THE COUPON TODAY FOR MORE INFORMATION ON  
THIS COMPLETELY NEW AND DIFFERENT ALLEN FAST CHARGER

## ALLEN EQUIPMENT

ALLEN ELECTRIC AND EQUIPMENT CO. • KALAMAZOO, MICHIGAN

BATTERY CHARGERS, ELECTRICAL TEST EQUIPMENT, MOTOR TUNE-UP AND WELDING EQUIPMENT

Allen Electric & Equipment Co.  
2109 North Pitcher Street  
Kalamazoo 13, Michigan  
Please send more information on the new Allen  
Portable Fast Charger.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

## Promotion Programs . . . (Continued from page 104)

special mimeographed weather report a week in advance to all farmers who desire it, the information being secured from Governmental Agencies.

Broadway Motors at 3401 Broadway, Kansas City, Mo., said that it pays to emphasize to patrons that insurance covers any accidents for a car which might occur at the

time when the car is in their service shop. With this in mind Broadway Motors has prepared a letter which it sends to car owners pointing out that they need not have a moment of worry when their automobile is being repaired in the service establishment because of this insurance. Broadway has completed a tie-in with a number of lo-

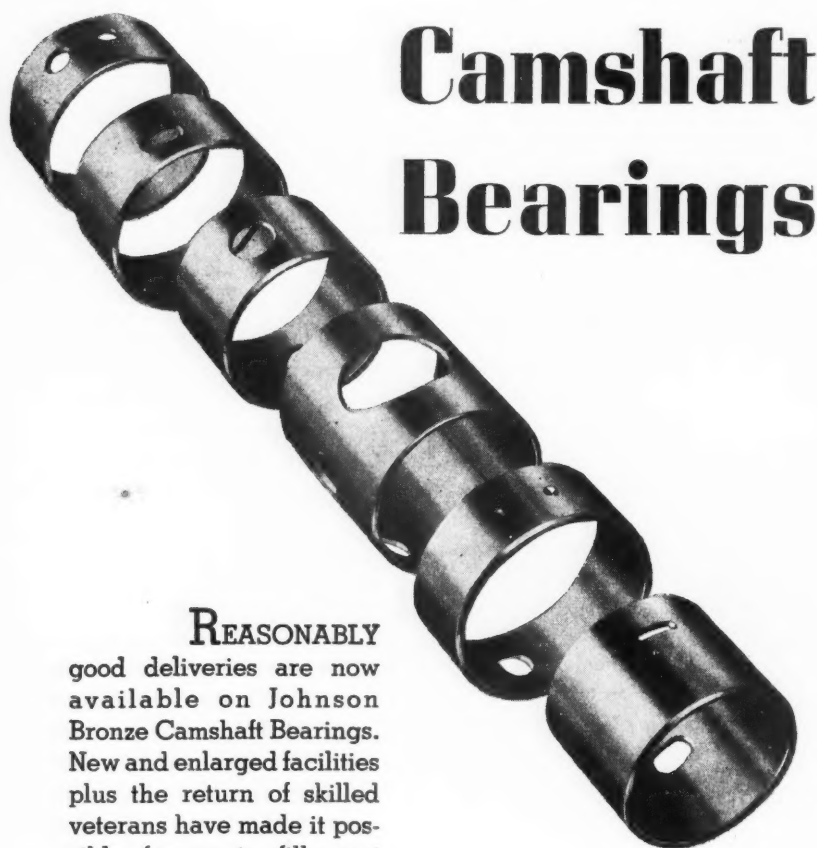
cal insurance agencies whereby the insurance agencies spotlight the fact in their windows that Broadway Motors is thoroughly protected against burglary or damage by individuals to any car in their possession at any time.

The Davidson Service Establishment at 709 N. 7th St., Kansas City, is currently interested in recruiting potential shop mechanics from high schools of the community. With this thought in mind several Davidson employees visit local high schools and short speeches before school assemblies explaining the nature of their duties and inviting high school seniors who are interested to report to the garage for a screening interview.

From the group of high school students who visit the garage not more than four are selected who will receive instruction in auto repair and will work a total of not more than 5 hr. daily receiving a special learners' compensation. Davidson believes that high school seniors make excellent mechanics because of their experience with Model A, Model T and other ancient jalopies.

Davidson is particularly interested in owners of new cars. These owners are naturally interested in

(Continued on page 108)



## Camshaft Bearings

**REASONABLY** good deliveries are now available on Johnson Bronze Camshaft Bearings. New and enlarged facilities plus the return of skilled veterans have made it possible for us to fill most orders from stock. Johnson Camshaft Bearings, like every other item in our line, are made to the highest standard of quality . . . correct in every detail. When properly installed they will deliver the maximum in smooth, quiet, performance for a greater period of time. You can not buy better bearings at any price.

### Catalogue

Write for a free copy of our complete parts catalogue TODAY.

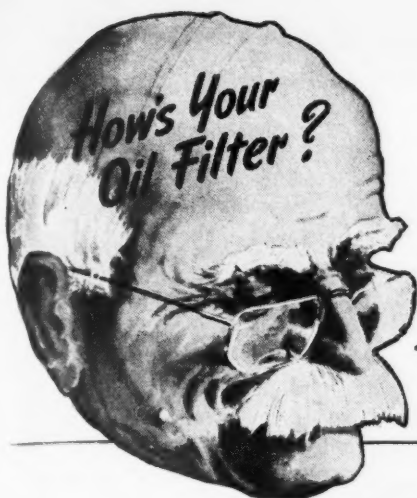
**JOHNSON** THE MOST COMPLETE SLEEVE BEARING SERVICE IN THE WORLD **BRONZE**  
SLEEVE BEARING HEADQUARTERS  
455 S. MILL STREET NEW CASTLE, PA.

### Tube Powder to Reduce Static Electricity

A powder that can be blown into automobile inner tubes to reduce static shock and car radio static is now available through distributors of U. S., Fisk and Gillette tires, according to the US Rubber Company, which developed and patented the powder for use in munitions plants.

An air hose and a specially designed container are used to inject about one tablespoon of powder into each tube after the tube has been deflated and its valve core removed. The powder tends to cling permanently to the walls of the tube for the life of the tube, modifying the electrical behavior of the tire and tube to eliminate or greatly reduce radio static interference and static shock.





I HELP YOU SELL MORE FRAM  
FILTERS AND CARTRIDGES TO  
OWNERS OF PRE-WAR CARS

THE FRAM "OLDSTER"

I HELP YOU SELL MORE FRAM  
FILTERS AND CARTRIDGES TO  
OWNERS OF POST-WAR CARS

THE FRAM "YOUNGSTER"



## FRAM'S two "Star Salesmen" Are Making Profits for Dealers Everywhere!

Providence, R. I. (SPECIAL) Reports from Fram Dealers throughout the country call Fram's "New and Old Car" Campaign the greatest ever for building filter and cartridge sales to "Your Greatest Unsold Market."

Dealers declare "Oldster" and "Youngster" handouts please their customers and do a real selling job at the same time. Many dealers are stringing up these handouts in novel, attention-getting ways. Used with big new Fram displays, the handouts tie-in with Fram's heavy national advertising, biggest campaign ever run by an oil filter manufacturer.

Fram jobbers and distributors also report record sales to dealers who are using these unusual sales helps. Orders placed with the Fram Corporation show that the "New and Old Car" Campaign has already topped all previous Fram merchandising records and the campaign is just getting into full stride.

All Fram dealers who are not already cashing in on the campaign are advised to contact their jobbers at once for a supply of sales helps so that they can get their share of the business that is pouring in. Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto, Ontario.

**FREE!**  
**TO FRAM**  
**DEALERS**

Call your jobber today for a free supply of Fram "Oldster" and "Youngster" handouts — give them to your customers and watch them sell more Fram filters and cartridges for you!



# FRAM

**OIL & MOTOR  
CLEANER**

*Cleans the Oil that Cleans the Motor*



## SOMETHING EXTRA IN BRAKE SERVICE, TOO PURITANIZE\*

Puritanize\* is that something extra in brake service that makes it easy for you to step up a small sale into a profitable servicing job.

When checking your customer's brake fluid, see if it is dirty and gummy. Chances are if it has gone through a tough winter, it's in a dangerously dirty condition. Then suggest a Puritanize\* job rather than just a shot of fluid. In this way you are insuring him of a clean, dependable and safe brake line and you are increasing your sales, too.

Puritan Hydraulic Brake Flushing Fluid makes quick and easy

work of flushing out brake systems. Quick and powerful in removing gums and dirt, and penetrating to every recess in the line, it is still harmless to rubber cups or metal parts. Then a refill with long-lasting, non-gumming Puritan Hydraulic Brake Fluid and your customer is off for a season of safe braking while you punch the higher numbers on your cash register.

Be prepared for these Puritanize\* jobs your customers need. Keep a supply of Puritan Flushing Fluid and Brake Fluid always on hand. Get them today from your N.A.P.A. jobber.

### \*PURITANIZE . . . TO BRAKE SAFETY



1. Clean hydraulic brake line with fast-acting Puritan Hydraulic Brake Flushing Fluid.

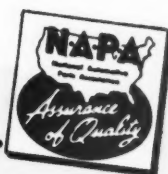


2. Refill with non-gumming, all-"miscible" Puritan Hydraulic Brake Fluid.



**PURITAN COMPANY, INC.**  
ROCHESTER 6, NEW YORK

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SHOCK AND KNEE-ACTION OIL



### Promotion Programs

(Continued from page 106)

protecting their investment in their new cars and are very service conscious. Naturally they will tend to take their cars to the establishment where they purchased them. But many times that is not possible nor desirable, and Davidson has compiled a list of new car owners whom it is soliciting through form letters. Davidson has planned also to offer a contest inviting new car owners to write a letter on what they do not like about their new car as well as what they do like. These letters will be compiled and used in frequent radio spots suggesting that car owners may have legitimate complaints which can be adjusted or modified through an inspection of the car in question at Davidson.

### Trucut Piston Re-grooving Attachment Introduced

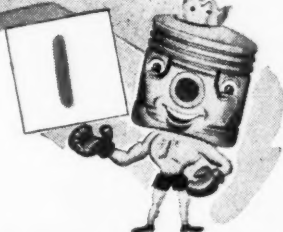
The Trucut, a piston re-grooving attachment for use with Trucut armature lathe and undercutter is now being manufactured by the Frank N. Wood Co., 344 W. Main St., Waukesha, Wis.

This re-groover is designed to re-groove most popular makes of aluminum or cast iron piston, centered or uncentered. It is composed of a bushing to fit in the tailstock centering chuck of the lathe, a centering cone which fits between the bushing and piston skirt end, a plate for centerless pistons and an adjustable center. The plate to be used on centerless pistons has three points which tighten into the head of the piston after it has been centered. Tool bit and pin are also provided to tighten the adjustable center to remove end play.

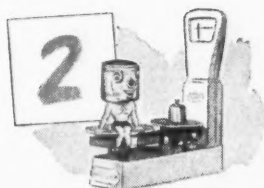
Trucut is also marketing an adjustable drill holder which accommodates many makes of 1/4 in. to 1/2 in. standard or heavy duty electric drills of from 800 to 2500 rpm. This unit has adjustable screws and chain clamps which hold the drill in place and may be used for stationary drilling, reaming, light buffing, grinding and wire brushing. Prices run from \$6.95 (with 1 in. diameter pulley) to \$8.40 (with 2 1/4 in. pulley) f.o.b. factory.

# The Story of a GENUINE Ford PISTON

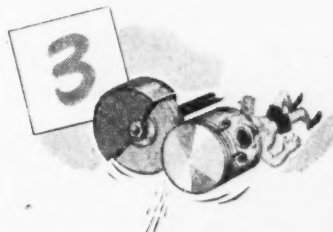
OR—WHY IT PAYS  
TO USE  
GENUINE  
FORD PARTS



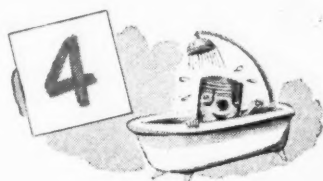
Just about everybody knows me—Ford Aluminum Piston, a flyweight champ for endurance, economy and fast performance. Like all Genuine Ford Parts, I'm specially made to fit right and work right in your Ford. Maybe you'd like to know about how I get that way. Here's the highlight story:



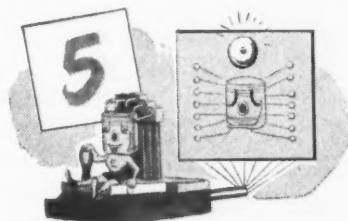
I'm a rough aluminum casting when the Ford people go to work on me. I get the machine treatment. Piston pin holes are machined to .0003 of an inch. And they can't vary more than .001 inch from a 90 degree angle with the side. Then they balance me and my mates to within 3 grams on a special scale.



I'm getting along now, and becoming more accurate all the time. Comes the grinding operation on my sides and here I really get the works. Three times I'm ground down—not just once as is the usual practice. In the grinding, Ford engineers give me a contour that allows for expansion when I get hot.



Now the toughest part is over, and I get to relax a little. I'm prettied up with a special "break-in" treatment that leaves me looking as bright as I feel. Now, when I get on the job, I'll be able to work myself smoothly into the cylinder for an even fit.



All along, every operation has been checked with precision instruments. As the last step, I'm placed in a very intricate machine that automatically checks all my measurements in a single operation. When the bell rings I know I've passed—ready for action.

**T**HAT'S why, folks, I'm such a lively character . . . lightweight for performance, accurate for economy and long-life. If you ever need me, be sure to get me—a Genuine Ford Part that's made right, to fit right and work longer . . . one of the family that's best for your Ford.



F O R D M O T O R C O M P A N Y

JUNE, 1947

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tician. He's got to wait till he sees which way the parade is goin' and then hop right out in front of it. So, I offered to take the missus over."

On the way to the lunch wagon, Tommy asked Larry: "Do you think Pop's really stuck?"

"Naw," said Larry. "He's only tryin' to show off some more. He thinks I won't be able to find the

trouble, and he can give me the horse laugh. But this is one time I'm gonna fool him."

"But the other shops couldn't find what was wrong."

"So what? There's a lotta handy-men posin' as mechanics."

They entered the wagon and climbed up on stools. "And when I spot the trouble," said Larry, taking a menu from between the salt

and pepper shakers, "am I gonna rub Pop's nose in it!"

"You sound as if you're really sore at him."

"You're darn tootin' I am. Do you know what he had the nerve to do this morning? Comes out in the shop with the classified-ad page from the papers and says to me, 'See this ad for the Peppo Filling Station? They're lookin' for a mechanic.'"

When they returned to the shop, Larry went to the washroom and when he came out he said to Tommy, "Well, I guess we'll have to look at that Dodge."

Larry climbed into the driver's seat, turned the ignition switch and stepped on the starter. His face lit up as the engine took hold but darkened again when the engine sputtered and quit. After three attempts, he managed to get it running.

Wheeling it out to the street, he turned at the next corner and headed for a moderately steep grade a couple of blocks from Main Street. The engine began to spit and Larry had to shift into second to get up the hill.

"Pop wasn't kidding when he said it didn't have any power," said Tommy.

"He can't kid me any time," growled Larry. "Wait till I get this crock back in the shop."

As soon as he got out, Larry started for the shop office. Trailing him, Tommy saw him run a finger along the backs of the shop manu-

(Continued on page 112)

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*Certified Accuracy*  
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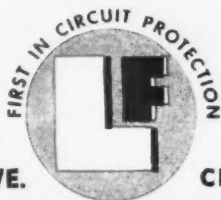
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JUNE, 1947

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als on the shelf behind Pop's desk. He pulled down the 1934 Dodge manual and started to thumb through it.

"I thought you knew what was wrong with it?" said Tommy.

"I ain't doin' nothin' Pop ain't already done," said Larry.

Finally, he found a paragraph that seemed to satisfy him. He grinned as he read it, then slapped

the book shut and replaced it.

"What did it say?" asked Tommy.

"Well, the way I figure it," said Larry, "it can't be but one thing. The head gasket is shot. Or then maybe the last guy that worked on it just naturally loused it up."

"But that's more than one thing," said Tommy.

"I'll have it pinned down before Pop gets back."

"You know what I think? I think it's valves."

Larry laughed. "If you don't want Pop to get hysterics, don't tell him it's valves," he said. "Didn't he say some shop just done a carbon-and-valve job on it?"

It was nearly three when Pop returned. After fussing around in the office a few minutes, he came out to the bench where Larry was turning down an armature.

"Well," he asked, "what did you find?"

"It's the head gasket," said Larry.

"How do you know?"

"It's spitting and ain't got no pep. What else could it be?"

"I don't know," said Pop. "What do you think, Tommy?"

Larry started to laugh.

"I think it's valves," said Tommy.

"Hmm," said Pop. He turned to Larry. "You know, I *could* let you tear the job down to show you where you was wrong."

"I'm willin' to tear it down," said Larry.

"But I got to thinkin' about it while I was out and —"

Larry smirked at Tommy. "Here it comes," he said.

"Suppose you take off the valve cover," said Pop.

"Oh, so you think the kid's right!" said Larry.

"Could be," said Pop.

"Then let him do it," said Larry, as he strode off.

(Continued on page 114)



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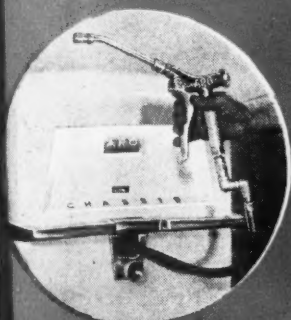
"And no more dropping paper bags filled with water on the Department of Internal Revenue."



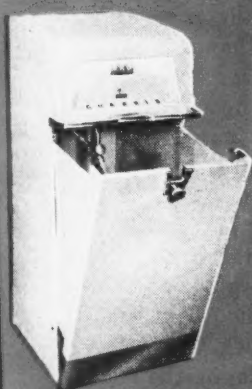
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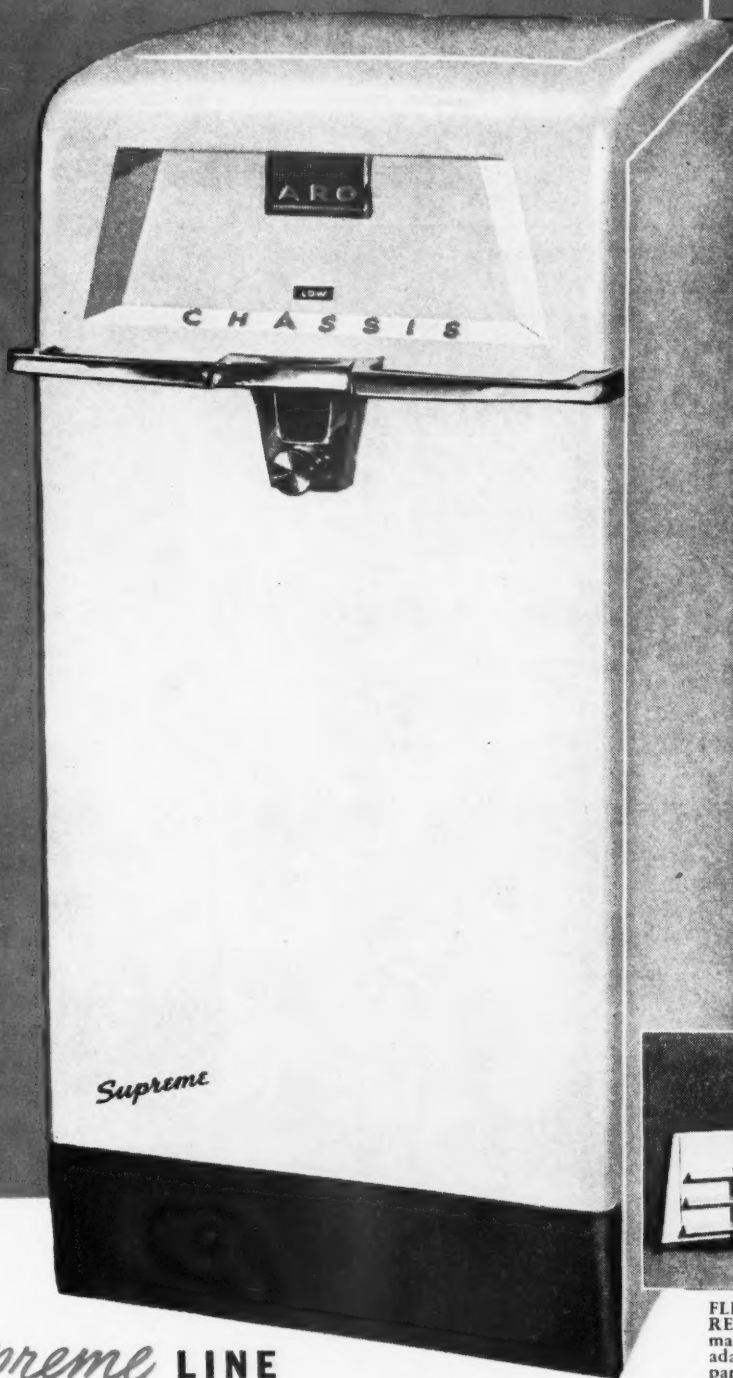
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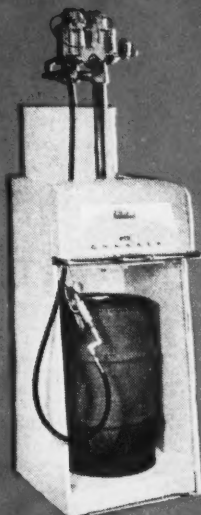
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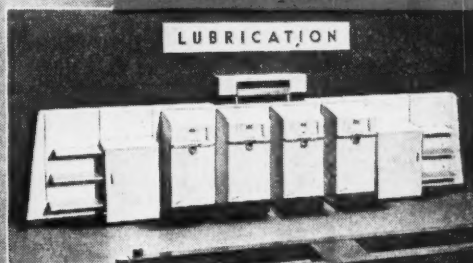
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Pop shrugged and grinned at Tommy. "They oughta use him for a stratosphere balloon," he said. "When he blows up, he really goes high." Pop started for the Dodge, and Tommy got the tools.

As soon as the latter had removed the valve-cover plates, Pop leaned over the fender and took a long look. Then he straightened up and chuckled.

"What'd you find?" asked Tommy.

"Look for yourself," said Pop, waving toward the engine. As Tommy leaned over, Pop pointed to the valve springs. "Notice the keepers of them springs?"

"Why the keepers are out of one spring!" exclaimed Tommy.

"Right," said Pop. "Whoever done the carbon-and-valve job

musta been hurryin' to keep a date. He's lucky more keepers didn't drop out." That valve has been stuck open ever since."

"No wonder the car didn't have any pep," said Tommy.

"I'm surprised it runs at all. That explains the hard startin'. Everytime that cylinder fired the explosion backed up through the manifold and diluted the mixture for the rest of the cylinders."

Curiosity had overcome Larry. He wandered over and asked sarcastically: "So it was valves, was it?"

"Nothin' else," said Pop. "Some hare-brained mechanic slipped up when he installed the valve spring keepers, so one popped out soon after the engine was started."

Larry's eyes grew narrow with disbelief. "You mean to stand there and tell us you figured out that them keepers was out? That don't happen once in a dozen years."

Pop thrust his hands deep in his coverall pockets and looked sagely at Larry. "I knowed it was a long shot. But that's just the reason I looked for it. Nobody else had been able to spot the trouble. So I figured it wasn't no sure thing. And besides, it didn't take near as much time to pull the valve covers as it would've to pull the cylinder head."

"With your luck," said Larry, "you oughta be playin' the horses."

"No," said Pop slowly. "I did bet on a horse once. But he never started. The milkman didn't cover his route in time to get him to the track."



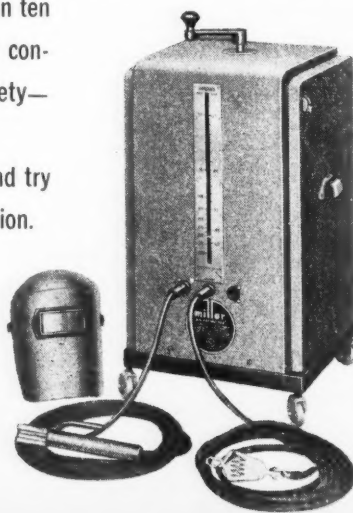
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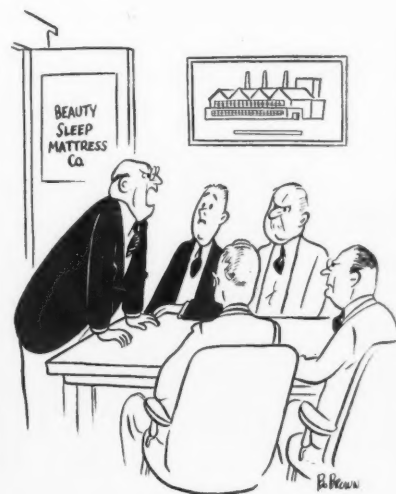
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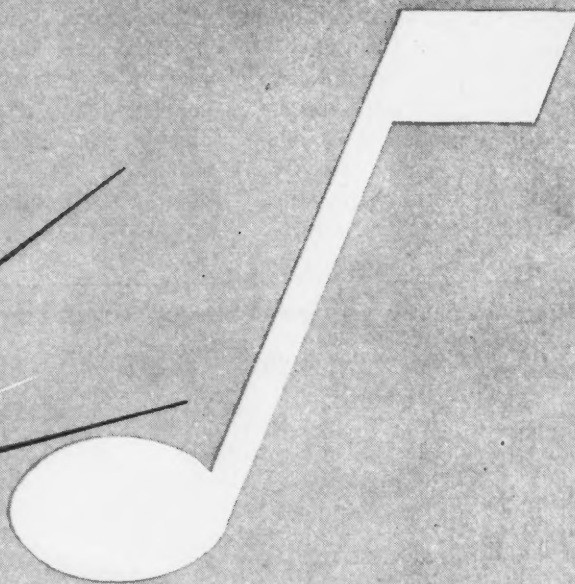
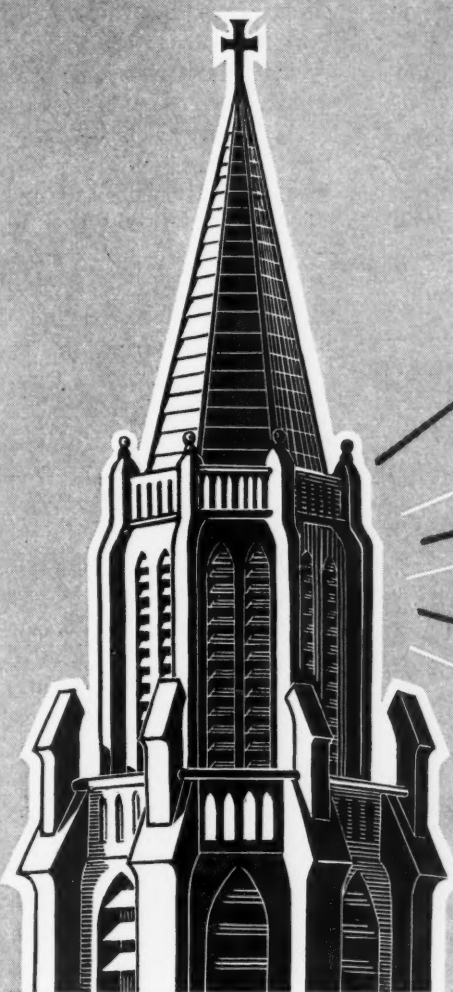
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## Willys Truck . . . . . (Continued from page 48)

duty Timken with spiral bevel gears and underslung spring centers. The standard gear ratio is 5.38 to 1, with an optional ratio of 6.17 to 1. All shocks are Gabriel direct-acting hydraulic, two-way type attached to the side rail with connecting link to the spring pad.

The brakes are Bendix hydraulics of the two floating shoe anchor,

self-centering type, with 11 in. drums.

The frame is made of one-piece pressed steel side channels with kick-up over front and rear axles, connected by six flanged U and channel section cross members. The wheelbase is 118 in., the overall length of the chassis with bumpers is 181 1/32 in.

The engines used in both the Delivery and the Truck are basically the same, although, as indicated above, the Delivery develops three additional brake horsepower by modified carburetion and intake manifold. The compression ratio for both models is 6.48 to 1, the bore and stroke 3 1/8 by 4 3/8. The crankshaft is counter-weighted and mounted in three Babbitt-lined, doweled bearings. Pistons are aluminum alloy, tin or brass plated, with two compression and one oil ring above the wrist pin. The timing train is of the gear type, using a molded composition fabric gear on the camshaft and cast iron on the crank.

Crankcase ventilation is accomplished by a sealed system from the air cleaner tube to the intake manifold. This system is actuated through a valve in the manifold which is connected by a tube to the valve spring cover. Clean air is drawn into the oil filler tube through a small hose to the air cleaner tube. The fuel pump is an AC combination fuel pump and vacuum booster assembly.

The clutch on the truck is a dry, single plate type, with an 8.5 in. driven plate, with woven molded facing on the pressure plate side and molded facing on the flywheel

(Continued on page 118)

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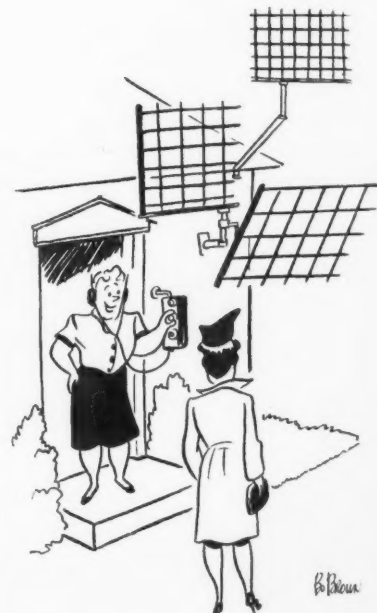
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## Willys Truck . . . . . (Continued from page 116)

side. The clutch release bearing is a sealed, grease-packed ball bearing of 120 lb. ft. torque capacity.

The Auto-Lite electrical system comprises a ventilated 6-volt, 35 amp. shunt-wound generator with three-unit voltage and current regulation. The starter is pedal-operated and has a manual engaging type over-running clutch pinion.

The steering is of the Ross cam

and twin lever type with a variable ratio, 15.4, 13.5, 15.4 to 1 and is mounted to the frame.

The fuel tank, like that of the Delivery, holds 15 gal. The radiator core is of the fin and tube type, 2 in. thick and provided with a 1 3/8 in. shroud ring. Coolant capacity is 11 qt. and a pressure cap is standard equipment.

The clear loading space of the

all-steel pick-up body is 78 13/16 in. long by 48 1/2 in. wide with tail-gate closed. Optional equipment for the pick-up body are the metal van enclosure and the canopy top.

Willys-Overland is also producing a modification of the truck, a four-wheel drive model that is the same as the two-wheel drive except for the additional drive components. These consist of a hypoid, full-floating Spicer front axle, basically the same as the Jeep's, and a Spicer transfer case. The gear ratio is 5.38 to 1, which, of course, limits the rear axle ratio to 5.38 to 1 as well. The transmission has special provisions for lubrication when used with the Spicer transfer case and two control levers, one for disengaging the front axle.

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Utica 1, New York, U. S. A.

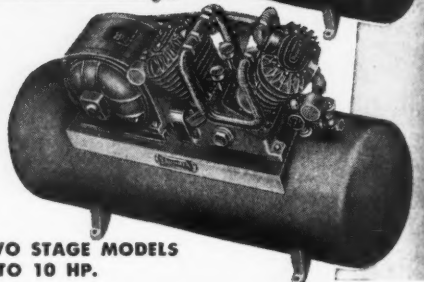
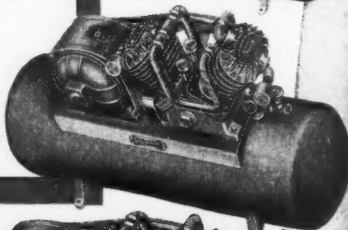
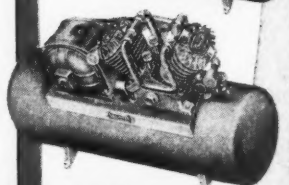
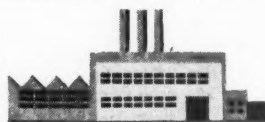


**SINGLE AND TWO STAGE MODELS**  
1/4 HP. TO 10 HP.



**AIR**

helps you serve better



### Sopec Hand Soap And Grease Remover

Production of a new industrial powdered hand soap and grease remover, known as "Sopec," has been announced by Speco, Inc., of 3142 Superior Ave., Cleveland 14, Ohio.

Suitable for use in washroom dispensers or packaged in containers, Sopec is claimed by the manufacturer to combat industrial dermatitis, and is described as hygienically safe, non-abrasive, soothing, fast acting and economical. It is furnished in 6 oz. containers, 5 lb. fiber packages and 170 lb. fiber drums.



"Then my whole life flashed before me. Boy, what an apartment I used to have."



# You're not in business for your **HEALTH**

**Y**OU'RE in business for one reason only—to make dough! Du Pont anti-freezes are popularly priced for volume sales, with discounts that allow dealers an ample margin of profit. That's the all-important reason why dealers like to carry fast-selling "Zerone" and "Zerex" anti-freeze.



## "ZERONE" \$1.00 gal.

The dollar brand in most demand.

## "ZEREX" \$2.65 gal.

Won't boil out—one filling lasts all winter.



*Read what four other smart ducks say:*



**STABLE PRICES.** Prices and discounts on "Zerone" and "Zerex" have remained stable. Du Pont has consistently recognized its obligation to provide quality products at low prices to the dealer and to his customers—the buying public.



**CONSISTENTLY ADVERTISED.** No other anti-freeze brand is backed by advertising in national magazines, newspapers, billboards—plus a nation-wide radio program. (Tune in Du Pont "Cavalcade of America," on NBC Monday evenings.)

**TECHNICALLY OUTSTANDING.** Special chemical inhibitors in "Zerone" and "Zerex" make them highly rust-retardant and anti-acid. These famous Du Pont anti-freezes help keep radiators and cooling systems in good operating condition.



**MADE BY DU PONT.** There's magic (and profits, too!) in the name Du Pont. The Du Pont trademark on every can of "Zerone" and "Zerex" means quick public acceptance—and gives dealers an already-sold market for their stocks.



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

**"ZERONE" AND "ZEREX"**  
ANTI-FREEZE

REG. U. S. PAT. OFF.

REG. U. S. PAT. OFF.

## Hydro-Lectric Tops . . (Continued from page 58)

lower the convertible top itself.

The hydraulic motor and pump assembly consists of an electric motor, a pump and a fluid reservoir assembled vertically into a single unit and activated by a solenoid operated switch attached to the outside of the motor housing. The power unit, cushioned on synthetic rubber mountings, is grounded to the body. It is installed on the

lower left cowl panel beneath the left front fender on Buick and Cadillac and on the front of the dash on Chevrolet, Pontiac and Oldsmobile, Chevrolet on the left side, Pontiac and Olds on the right.

The pump is provided with a combination spring-loaded maximum pressure relief and flow control valve of the piston type. This valve is adjusted to a maximum

fluid pressure of 210 lb. per sq. in. and must not be changed to provide a higher pressure.

Before the hydraulic motor and pump assembly can be removed from the Chevrolet, Pontiac or Olds, the positive terminal of the battery and the pump ground strap and electric wires must be disconnected.

The hydraulic tubing is then disconnected at the pump and the ends capped. The top should not be moved while the pump is disconnected as the fluid may be forced from the lines.

The bolt is removed from the rubber mounting at the top of the pump and the two bolts from the rubber mountings at the bottom. The power unit can then be lifted from the mounting supports. The unit can be replaced by reversing this procedure.

On the Buick and Cadillac, the hood is first raised or removed and the positive battery terminal disconnected. The hydraulic tubing protruding through the dash panel is disconnected and capped. The wiring and ground strap are then disconnected from the pump.

Working under the car, the wire bail and the fluid reservoir are removed in order to make the two lower motor support attachments accessible. Removing the nuts holding the motor to its upper and lower supports will permit the complete assembly to be removed

(Continued on page 124)



## CUT JOB COSTS



### MILLING ATTACHMENT

Milling and keyway cutting operations can be performed with this attachment—a typical example of how you get greater value in South Bend Lathes.

South Bend Lathes turn out more and better service work in less time and at lower cost. They are indispensable for reconditioning operations on pistons, valves, shafts, king pins, axles, brake drums, commutators; making bushings and many other parts. You keep the work in your own shop—save machining charges—and speed-up your service.

South Bend Lathes are fast, easy to operate and exceedingly accurate. Their versatility permits efficient performance over the entire range of automotive service operations. If you are interested in cutting job costs and doing better service work, get complete information on South Bend Lathes. Write for Catalog 100-F, it describes South Bend Lathes with 9", 10", 13", 14½", and 16" swings.

BUILDING BETTER LATHES SINCE 1906



**SOUTH BEND LATHE WORKS**

450 EAST MADISON STREET • SOUTH BEND 22, INDIANA



"And this dial cuts out all the interference from the back seat."

# It Pays to be Thorough



When you are servicing a Carter Carburetor after thousands of miles of efficient service be sure you do the job right—by using the Carter Repair Package.

Here in one convenient, easy to order kit, are all of the necessary parts to do a thorough job. Even complete Tune-Up instructions are included.

Order from your nearest Carter distributor or jobber.

**CARTER CARBURETOR CORPORATION**

St. Louis 7, Missouri

Division of American Car and Foundry Company



**CARBURETOR**

TRADE MARK REG. U. S. PAT. OFF.  
MARCA REGISTRADA

# *the* CARTER REPAIR PACKAGE

*restores new car carburetor  
efficiency and economy*



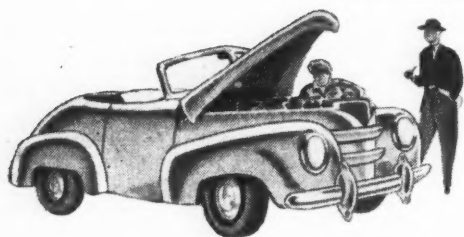
THE MAGAZINE? . . .

# Collier's

THE SERVICE? . . .

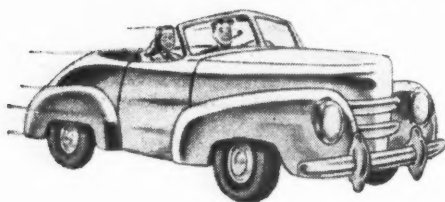
# P.S. (PREVENTIVE SERVICE)

THE AIM? . . .



To Persuade Car Operators  
to Check-Up . . . Fix-Up . . . Tune-Up  
for Safety and  
for more Driving Pleasure

THE RESULT? . . .



Cuts Down Accidents  
Sells Regular "Service" as an Economic  
and Social "Must"  
Sharpens Readers' Interest in all  
Automotive Advertising in Collier's

## OF INTEREST TO THE SERVICE MAN?

### COLLIER'S P.S.

FOR: 1946  
WINTER CHECK-UP



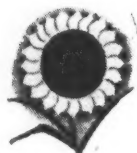
365,000 reprints of the  
P. S. Mailers ordered by 323  
Service Managers  
for Mailing to their local  
Customers

1947 SPRING  
TUNE-UP



925,000 reprints of P. S.  
Mailers ordered by 1151  
Service Managers  
for Mailing to their local  
Customers

1947 SUMMER  
CHECK-UP



At press time, it is still  
too early to list the  
response by Service Station  
Managers to Collier's  
Summertime Check-Up promotion.  
But they like this Collier's  
plan to promote a third seasonal  
service peak spotted between  
the regular Spring and Winter  
Check-Up, Tune-Up, Fix-Up periods.

Isn't this  
too high a price to pay?

**33,500 KILLED**  
**1,150,000 INJURED**

## An Ounce of Prevention is Worth a Pound of Cure

FOR  
PUBLICATION IN  
COLLIER'S  
JULY 12TH  
ON THE  
NEWSSTANDS  
JULY 3rd

For years the National Safety Council, the Highway Safety Council, and the Department of Transportation, through their established service, have been kept regular car inspections. Since 1980, CONSUMERS have used the P.O. - PREVENTIVE SERVICE - Campaign to improve the market, by unbiased and authentic information, that the safety caused by accidents can to a very great degree be limited by every driver, asserting the responsibility of PREVENTIVE SERVICE in his own car.

This Report is submitted to Congress in conformity with Public Law 85-623.

## BRAKES

1. **Exhaustion** happens when the driver becomes too tired to keep going. This can lead to accidents caused by misjudgment, fatigue, and loss of reaction time. To prevent exhaustion, drivers should get enough sleep, eat well, and take breaks when needed.

## STEERING

2. When headsets and earbuds are used, students are not able to hear the teacher or each other. This can be a problem in a classroom setting where students are expected to hear the teacher and each other. The teacher should be aware of this and make sure that students are able to hear the teacher and each other. The teacher should also make sure that students are able to hear the teacher and each other. The teacher should also make sure that students are able to hear the teacher and each other.

**TIRES**

1. Reducing old worn tires before they can cause trouble is much more than making an accident. Furthermore, the use of safe tires of the one makes it the proven kind of economy to provide for you.

**LIGHTS**

1. Highest sort of forces, burned out before they  
involve everything else. Involvement continues, but  
glow has been lost - all are cases of burnout and  
involvement, however 31% of total population

**VISIBILITY**

5 Keep driving water into night and day. First, you should water should make plants continue to grow in clearing patches, growing in Kancheng, grass and stone (from bugs and dust for the down's eyes and mouth). Keep your car with someone who would be able to drive and give them. Good driving is possible during every weekend, such as the

# Don't Gamble With SAFETY

# Collier's Preventive Service

## FIVE STEPS TO SAFETY

**P.S.**

### Preventive Service for Motor Car Owners

Sponsored by Luther's  
For Pleasure Sale Drive

**COLLIER'S SELLS AUTO OWNERS ON THE IDEA OF  
REGULAR SERVICE FOR THEIR CARS IN SPRING,  
SUMMER AND WINTER**

Leading Service Station Operators from coast to coast are joining with Police Departments, Automobile Associations and other civic organizations in campaigning for safer driving. When Collier's P. S. Safety Spread hits the newsstands July 3rd,

millions of car owners will become Safety Service-conscious, creating new demands for parts and service.

**Profit-wise Service Station Operators never miss tying-in with Collier's P. S. Safety-Service Program.**

# Collier's P.S.

## PREVENTIVE SERVICE

# More Tube Repair Profits with the new **BOWES "SEAL FAST"** Chemical Tube Repair Dispenser!



Open, it makes all your tube repair materials easy to reach. Closed, it attracts the customer's eye and builds business.

## HANDY...ATTRACTIVE...IT SAVES TIME AND BRINGS YOU MORE BUSINESS!

● Now you can have all your tube repair materials right at hand with the new Bowes "Seal Fast" Tube Repair Dispenser Kit! Compact . . . convenient . . . it saves you time and steps. Bright and attractive, it brings the whole enormous Bowes "Seal Fast" advertising campaign right inside your door and completes the final step. It's a real business-getter . . . get yours today for more tube repair profits!

## GO AFTER TIRE REPAIR, TOO!

● Don't forget that the fellow who gets dependable Bowes "Seal Fast" casing repair is your best prospect for tire trade-ins. Go after tire repair business NOW . . . make the



tire repair profits and insure the trade-in business!

**BOWES "SEAL FAST" CORPORATION**  
INDIANAPOLIS 7, INDIANA

## Hydro-Lectric Tops

(Continued from page 120)

from below. The units can be replaced by reversing this procedure.

The base plate of the operating valve assembly is an aluminum die casting with four holes  $\frac{1}{8}$  in. for pipe thread (approximately 13/32 in. I.D.) for fluid tubing connections and four port holes on its inner face. A molded plastic valve with a lapped sealing face is held in fluid-tight contact with the aluminum die casting by a coil spring and also by the differential in fluid pressure on both sides of the plastic valve when the pump is in operation. An inner plastic cover, which houses the plastic valve, is held to the die casting by four screws and sealed against leakage by a synthetic rubber ring. Another rubber ring, installed between the valve and the inner cover, seals the valve operating shaft against leakage.

A self-centering spring built into the outer plastic cover returns the operating valve assembly and control knob to neutral when the operator releases the knob. This also breaks the electrical connection and stops the pump and motor.

The operating valve assembly can be removed by disconnecting the positive terminal of the battery, the push-pull control rod at the valve end and the two electric wires. The screws that hold the valve to the support may then be removed and the valve lifted out. This procedure is reversed to replace or install the valve.

Normally the top control rod is adjusted to permit at least  $\frac{1}{8}$  in. over-travel in either direction to insure the electrical switch making positive contact. This adjustment should be made if the rod is repaired or replaced.

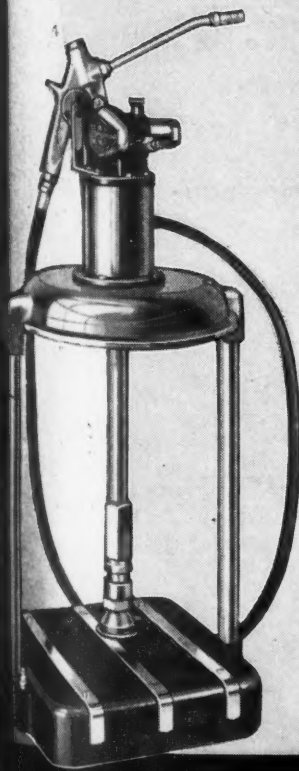
The set screw holding the end of the control rod to the operating valve is loosened and the rod is positioned so that there is 13/32 in. maximum between the ferrule on the rod support bracket at the dash panel and the forward end of the knob. The set screw at the valve is then tightened. This adjustment includes the prescribed  $\frac{1}{8}$  in. over-travel for the control.

(Continued on page 127)



# U.S. LUBE UNITS

**WITH POSITIVE, UNIFORM  
FLOW OF LUBRICANT**



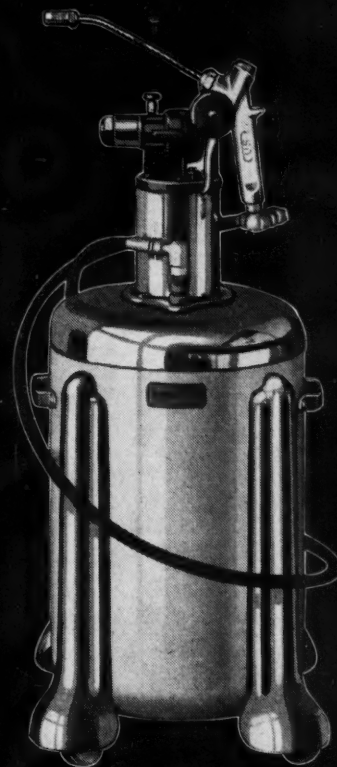
**JB-530 Air-Operated Brand  
Display Chassis Lubricating Unit**  
Matching Hand Operated Gear Lube  
Unit and Oil Drain Unit also available.

The flow of lubricant from a U. S. Lube Unit is always positive, even, and steady—never in jerks and sputters that fizzle out to nothing. On both the up and down strokes of the powerful, compactly-built lube pump, air pressure is controlled by one, and only one, air valve. Seated against glass-hard nitralloy steel, this precision-machined, patented Rotary Air Valve will show little, if any, wear even after years of use.

There is a U. S. Lube Unit for every purpose—to make your job easier—save you time and effort. The air-operated De Luxe Silver Scout Chassis Lubricator illustrated above is portable—extremely easy to keep clean. Accommodates 25 or 50-pound grease containers—or 65 pounds of bulk lubricant.

U. S. Brand Display Lube Units help you to cash in on the merchandising program of your supplier—by openly displaying and identifying the products you sell—and providing the perfect tie-in with valuable national or local advertising. Equipped with the patented U. S. elevator lifting mechanism, which automatically raises cover, pump unit, and suction stub for easy changing of drums.

*Send for new U. S. Lubricating Equipment Catalog.*



**JB-25 Air-Operated De Luxe Silver Scout  
Chassis Lubricating Unit**

Other units available for complete matched set.



**The UNITED STATES AIR COMPRESSOR Co.**  
5300 HARVARD AVENUE • CLEVELAND 5, OHIO  
**AIR COMPRESSORS • HYDRAULIC LIFTS • LUBRICATING EQUIPMENT**



The **HOTTEST** NEWS  
EVER RELEASED BY Clayton...

**Now!**

THE NEW MODEL C  
MEDIUM DUTY

**KERRICK  
KLEANER**

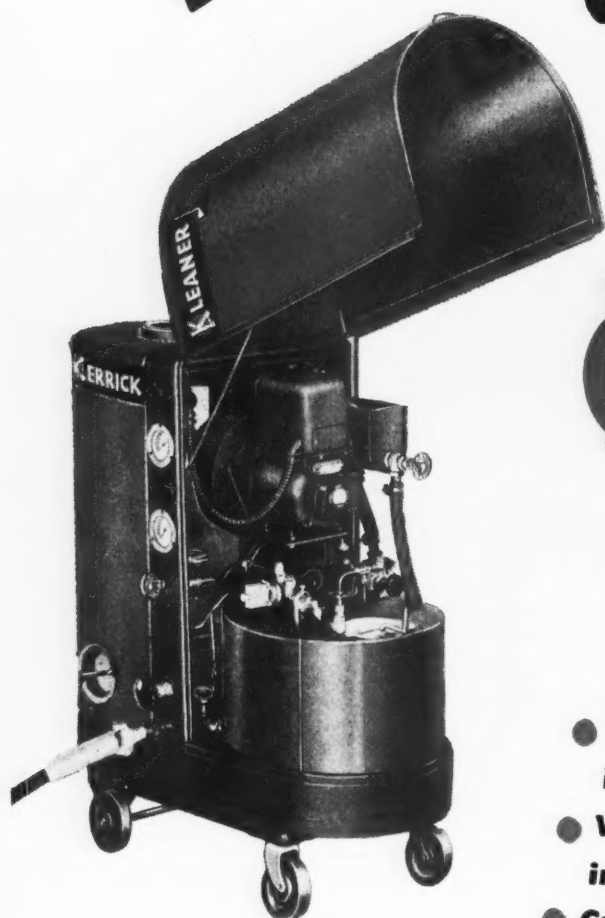
**\$437<sup>50</sup>**

Portable,  
oil fired;  
Stationary,  
gas fired.

Including hose, gun, nozzle and accessories.

**NO EXTRAS TO BUY**

- The most efficient medium duty cleaning machine ever developed.
- Worthy of the name KERRICK KLEANER in every sense of the word.
- Complete; fully equipped. Built to outperform any other steam cleaning equipment selling under six hundred dollars.



CLAYTON MANUFACTURING CO. M-6  
El Monte, Calif.

Send me fully descriptive literature on the new, low-priced Model C Kerrick Kleaner.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Jobber \_\_\_\_\_

**MAIL THIS COUPON TODAY**



## Hydro-Lectric Tops . . (Continued from page 124)

rod. If, in making this adjustment, the rod is not long enough to be securely held by the set screw on the valve, the retaining nut is removed, the stop nut on the end of the sleeve is loosened and the control rod knob assembly unscrewed until the proper length is obtained.

Servicing the power top presents no special difficulties. If the top fails to operate, the battery should be checked first. It should be possible to raise or lower it in not more than 14 seconds with the hydraulic motor and pump assembly delivering a fluid pressure of not over 190 psi. This applies with a battery gravity reading of not less than 1200 or equivalent voltage at ordinary room temperature. If the trouble is not located in this way, the operating linkage, the fluid level, the operating valve and the hydraulic motor and pump should be checked carefully.

If the top, in the raised position, is too far forward or does not move forward far enough to allow the dowels on top of the windshield header to enter easily into the dowel holes in the front roof rail, the following adjustments may be made:

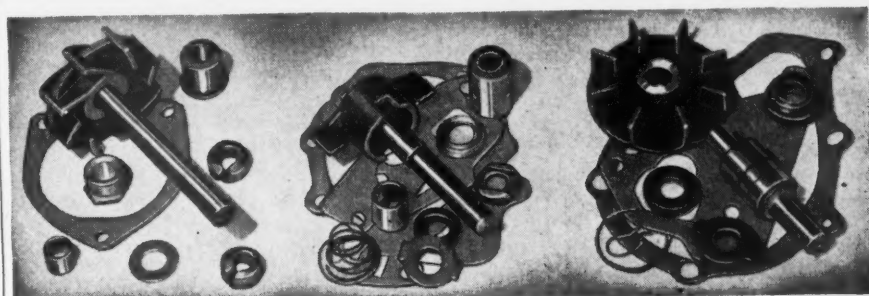
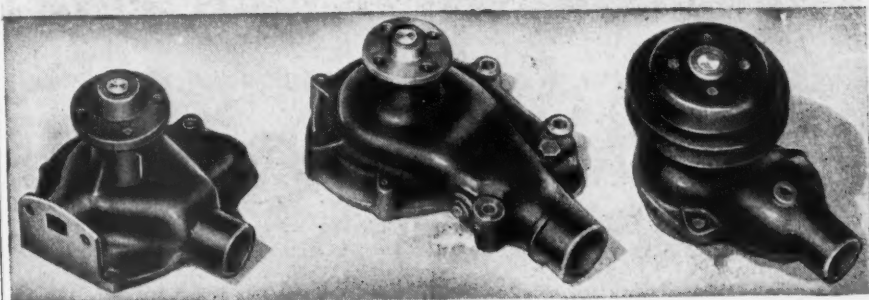
The top is unlatched above the windshield header and raised slightly. The attaching bolts in the corner brace at the front end of the side roof rail are loosened. The slotted holes in this corner brace will allow a forward or backward

adjustment to correct the alignment.

If the side roof rail is too high or low in relation to the top of the door or quarter window the top should be unlatched above the windshield and raised halfway. The rear seat cushion and back and the rear quarter trim panel are then removed to give access to the top adjusting plate at the rear

quarter section of the body. The three plate attaching screws are loosened. Downward movement of the adjusting plate will raise the side roof rail and upward movement of the plate will lower it. If the top, when folded down, does not touch the bumper on either side of the top compartment, loosening the same three screws and moving the adjusting plate rearward will lower the top in its compartment and make it easier to fit the top boot when the top is down.

### ***Dependable Quality*** **WATER PUMPS and REPAIR KITS**



- **Finest Quality line of Pumps and Repair Kits—all interchangeable with original equipment.**
- **Also available—complete line of Parts, Supplies and Accessories.**
- **Immediate Delivery on most items.**



*Send for  
Catalog*

New 1947  
catalog of our  
complete line  
now available.

**LION AUTO PARTS  
and MFG. CO., Inc.**  
1920 S. MICHIGAN AVE.  
CHICAGO 16, ILLINOIS



"And now, how did you fellows get here"



In cases where the curved rear quarter section of the top does not fit properly against the rear quarter window, three corrective methods may be used:

The rear quarter window itself may be moved forward or backward, upward or downward by loosening the two adjusting screws and the window pivot bolt. This is a floating adjustment, and access to the adjusting screws is obtained by removing the rear quarter trim.

Again, if the spacing is excessive, the wooden filler section of the rear quarter panel may be removed and a thickness of waterproof cardboard shim placed behind it. The attaching screws of this wooden filler are accessible from the rear of the pillar. This is probably the best method to use in making this adjustment.

A third method is to loosen the hinge fulcrum attaching screws. Oversize holes at the base of this metal upright allow for a forward

or backward adjustment to increase or diminish the spacing at the rear quarter window. Any one of these methods should accomplish the necessary adjustment. It may occasionally be necessary, however, to use a combination of methods if, in the opinion of the body man, best results can be achieved in that way.

GM suggests, in regard to general servicing of the Hydro-Lectric tops, that each fall the reservoir on the power unit should be removed, cleaned out with alcohol and the pump reservoir refilled to within a half-inch of the top with Delco Super No. 9 brake fluid or equivalent. Fluid level should never be checked with the top in a raised position. Checking is accomplished by moving the spring wire bail out of position and lowering the reservoir. Mineral base oil must never be used. Following fluid replacement, the top should be operated until all air has left the tubes. It is not necessary to bleed them.

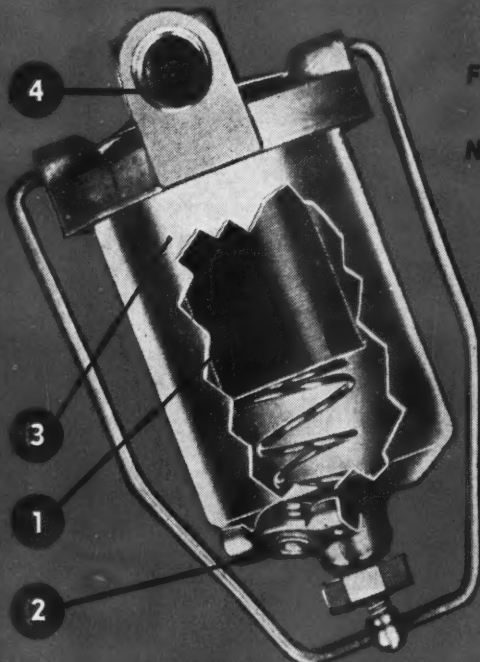
To obtain maximum pressure in the tubes, the control knob is pushed all the way in and held for 10 to 15 seconds after the top has reached its maximum "up" position. Each connection should then be inspected for leaks.

Pump failure is sometimes due to the pump being out of prime. It can be re-primed by removing the plug at the front of the pump and inserting the nozzle of a squirt can filled with hydraulic fluid.

Tubing should never be disconnected without first disconnecting the positive battery terminal to pre-

(Continued on page 130)

## KEM ASSORTMENTS • FUEL PUMPS & PARTS • IGNITION PARTS



FIRST FOR FIGHTING  
AIRCRAFT,  
NOW FOR—  
AUTOMOBILES

### the KEM-AERO FUEL FILTER

WAR-BORN experience is ushering in a new stream-lined, trouble-free era for the American motorist, and Kem proudly adds the Kem-Aero Fuel Filter to the list of products that are making the automotive world a brighter one.

1. Amazing plastic micro-porous filter element—stops all dirt particles down to 1/1000 of an inch in diameter!

2. Quick-acting drain plug, permits cleaning without dismantling unit, relieves vapor-lock instantly.

3. Extruded aluminum dirt-collector—unbreakable, eliminates water from fuel.

4. Universal inlet and outlet holes—permit installation on any engine.

Write today for free catalog of profit-building KEM-Prefitted products.

**KEM**  
Prefitted  
REG. U.S. PAT. OFF.

REPLACE • REPAIR • REBUILD with KEM

**KEM MANUFACTURING CO., INC.**

601 West 26th Street, New York 1, N. Y.



# HEAD GASKETS

precision made  
to highest  
specifications

**BLACK**

**STEEL**

**COPPER**

by **FEL-PRO**

**INDIVIDUALLY OR IN FULL SETS**

Whatever the job, when you ask for Fel-Pro Gaskets you can match original head gasket equipment or use your special favorite—be it black, steel or copper. You can get those Fel-Pro black, steel or copper head gaskets individually, in Valve Grinding Sets or in Full Gasket Sets. They're compression-tight, leak-proof, uniformly dependable, preferred by thousands of manufacturers and tens of thousands of repair shops all over the world. Just as Fel-Pro Gaskets satisfy the highest specifications of America's leading engine manufacturers, so will Fel-Pro meet your highest expectations of extra value in gaskets.



**STOP every "DRIP"  
and keep him stopped  
use FEL-PRO!**

**FULL GASKET SETS, PACKINGS, GREASE RETAINERS**



2293

**FELT PRODUCTS MFG. CO. 1521 CARROLL AVENUE • CHICAGO 7, ILLINOIS**

## Hydro-Lectric Tops

(Continued from page 128)

vent accidental pumping of fluid, as this fluid will damage finished surfaces and upholstery. It is also advisable, when working on the top mechanism, to spread sufficient absorbent cloths to catch and absorb any fluid that may spill. Before any fittings or tubing are replaced, a thin coat of sealing compound should be applied to the threaded area to prevent seepage of fluid.

## Pratt Elected Hudson Vice-President of Sales

George H. Pratt has been elected vice-president in charge of sales of the Hudson Motor Car Company at a meeting of the company's board of directors, announced A. E. Barit, president and general manager.

Pratt, who has held the post of general sales manager, has been a member of the board of directors since May, 1945.

Joining Hudson in August, 1927,

Pratt has had widespread experience in all phases of automobile sales activity. He started with the company as a field sales representative and progressed to the posts of district manager and then zone manager. In 1937 he was appointed sales manager and in 1939, general sales manager.

Before joining Hudson, Pratt held executive sales positions with several other automobile manufacturers.

## Seiberling Promotions

The appointment of E. B. Spoonamore as advertising manager of Seiberling Rubber Co. was announced recently by L. M. Seiberling, the company's sales manager.

Spoonamore fills the vacancy created by the recent resignation of Earl H. Cook, who has left the company to accept another assignment. G. F. Weisenbach continues as director of advertising and merchandising, in charge of the two departments.

Spoonamore joined Seiberling in October of last year after two years with an Akron advertising agency, and previous experience in the advertising department of the Goodyear Tire & Rubber Co. He has been in Seiberling's sales promotion division.

John Paul Kelley, formerly in the Seiberling advertising department, moves into the merchandising-sales promotion position vacated by Spoonamore. Kelley joined the company in July of last year after his release from army service.

## CENTRAL ALLSIZE HOSE CLAMP COMPLETELY UNIVERSAL



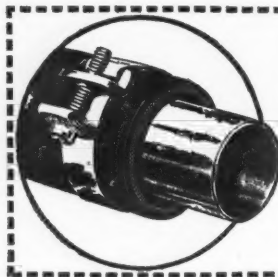
THIS ONE LENGTH CLAMP  
SERVES ANY SIZE  
HOSE UP TO 3 INCH O.D.!

This popular **ALLSIZE** has  
been serving thousands  
of jobbers and dealers  
for many years!



THE **ALLSIZE** UNIVERSAL  
CLAMP IS PREFERRED BECAUSE

- Vibration won't loosen it—won't cut through hose!
- Costs less! Economical, can be used again and again!
- Minimizes your investment—stock one size only—fits any hose!
- Can be taken off or put on without disconnecting hose!
- Unlimited take up—completely universal—the preferred clamp!



CENTRAL EQUIPMENT CO., 1020 W. Adams St.  
Chicago 7, Illinois

Without obligation please send me FREE SAMPLE of  
the CENTRAL ALLSIZE Universal HOSE CLAMP and descrip-  
tive literature. (6547)

Name .....

Address .....

City ..... State .....



"Look faint, Emily. We'll use that 'rushing to the hospital' gag."



*Yes*

**WE HAVE**



**AUTOPULSE**  
ELECTRIC  
**FUEL PUMPS**

**FOR EVERY CAR  
ON THE ROAD**



WRITE US DIRECT FOR QUOTATION

**AUTOPULSE** *Corporation*

2821 Brooklyn Ave., Detroit 1, Michigan

## Clearing House . . . . (Continued from page 55)

worn, causing the rollers to slip inside the overdrive rear shaft. As you know, this would necessitate removing the overdrive unit and disassembling it and checking it for worn parts.

### Ford Burns Points Badly

We have a 1937 Ford that was continually stalling because one set

of the points would burn badly. The owner had replaced two coils to try to correct this, also two distributors.

We put a rebuilding job on the motor and then, trying to correct the above trouble, replaced the points and synchronized the distributor. We replaced the condenser and resistor in primary circuit to

the coil. The car ran fine for one week and then turned up with the same set of points burned so badly it would not start. Can you help us with this?—Allen R. Grow, Brandon Motor Co., Brandon, Minn.

If you are absolutely sure that the breaker points on your 1937 Ford distributor were accurately synchronized and also that your condenser was in good condition and that the resistor has not been shorted, I believe that the most likely cause of your trouble would be excessive voltage.

I suggest that you check the voltage at the generator and also at the coil, and I strongly advise the installation of a later model generator and voltage regulator. This will not only increase the life of your battery but also eliminate the possibility of excessive voltage reaching the coil or lights. Also check the resistance in series with the ignition. This resistance is mounted on the dash and it is not unusual to find that some mechanic has wired around it, rather than make a replacement. This would give too high a voltage at the breaker points and cause the trouble you describe.



1. Profits begin when you display the famous Pennzoil sign—customers recognize it and come in to buy the quality for which it stands.
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Member Penn Grade Crude Oil Ass'n., Permit No. 2

**PENNZOIL MOTOR OIL & LUBRICANTS**

### Packard Raises Prices

(Continued from page 56)

quarter, due to material shortages. Instead of building 17,800 cars, as originally scheduled for the period, the company was able to produce only 11,710. Packard has a capacity far in excess of what was even planned.



## 1947 ASI Show

(Continued from page 56)

Company, Cleveland, Ohio.

The Space Contract Committee will be under the chairmanship of B. G. Close, whose co-workers will consist of R. D. Black; F. S. Roberts; W. T. Mills, Auto Parts Company; J. M. Spangler; and W. F. Wilkerson, Wyoming Automotive Supply Company.

S. B. Wilson, Fram Corporation, chairman of JOC's Publicity Committee, along with Hal Miller and N. F. Kaplan, will function jointly with the Automotive Advertiser's Council. Council members will be responsible for 1947 ASI Show promotional activity, as well as all matters pertaining to show publicity and decorations.

### Akar Model 33 Car Washer

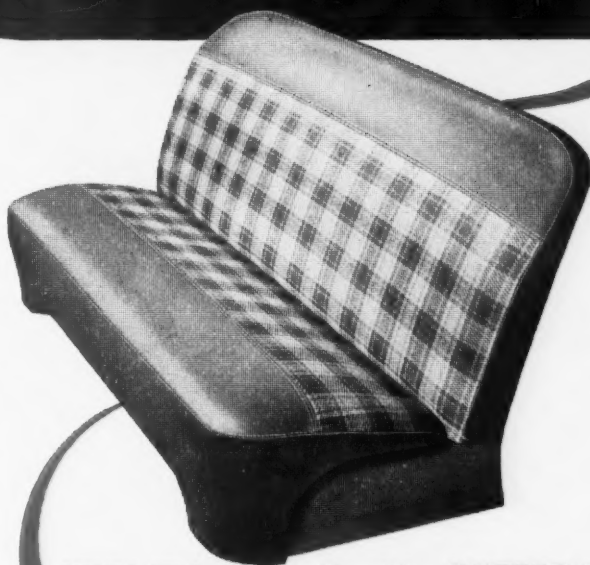
The Akar Model 33 car washer, manufactured by the Kass-Harr Company, of 559 W. 16th St., Chicago 16, Ill., consists of a 33 in. hollow, seamless aluminum tube to which is attached a flexible coiled spring which holds a double-sided textile head. This head is removable, washable and replaceable. According to the maker, the spring causes the textile head to conform to any surface to which it is applied, making it possible to get into difficult places. A female fitting on the end of the tube permits a hose to be attached so that a flow of water is directed through the head. The unit weighs one pound.

### Silicon-Copper Welding Rod

The Air Reduction Sales Company has introduced a new welding rod, the Airco No. 23A. This rod is of a silicon-copper analysis, while the previous rod offered for copper welding was of a phosphorus-deoxidized copper analysis.

The makers claim that these rods have superior flowing characteristics and will provide stronger welds and close color match on copper. Its cost is well below that of the silver-copper rods sometimes used for this class of work. It is available in 1/4, 3/16 and 1/8 in. diameters.

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## WHY This New Rankin BETTER-PROFIT PLAN is the Talk of the Industry . . .

Think of selling a de-luxe, custom-fitted cover, for no more than your competitor charges for a non-fitted cover! That's the revolutionary, new Rankin plan.

We individually tailor Rankin covers for every model car since 1936 . . . then MASS-PRODUCE them on a huge-volume basis, to retail at popular, competitive prices.

No sales to cut-price houses or chains. You're 100% protected on your profits.

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Dept. R, Cedar Falls, Iowa

Please send free literature on your better profit plan on seat covers.

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Address .....  
Town ..... State.....



## Race Story . . . . . (Continued from page 64)

meetings between the respective principals did not reconcile the deadlock until a few days before the race, when they were permitted to attempt to qualify and fill the gaps in the line up. Details of the "strike" are given in the news section of this issue. Mechanical details of many of the cars were given in the May and June issues of MOTOR AGE. Only two of the "hold

out" cars, May's Bowes Seal Fast Special and the Schof Special finished in the money. The twelve cylinder Mercedes 1939 Grand Prix machine was recently purchased by Don Lee, Inc. H. L. Brooke, of Coventry, England, entered a six cylinder E.R.A. The remaining entries were about evenly divided between fours and eights.

Even though the entry list was

small sufficient variety of design was on hand to gladden the eye and heart of any racing enthusiast. Brooke's E.R.A. entry is of very interesting design and features a number of ingenious constructions. However, they were unable to complete mechanical work in time for qualification.

The engine is built around a three bearing crankshaft running in aluminum-tin alloy plain bearings. The aluminum alloy head is detachable and has hemispherical combustion chambers with valves set at 90 degrees. Valves are operated by short push rods and tappets from two cams in the upper portion of the cast iron block-crankcase unit.

The E.R.A. engine is Zoller-blown and has a displacement of 91 cu. in. The bore and stroke are 63 and 80 mm, respectively. Output is understood to be about 250 hp @ approximately 8,000 rpm.

Front suspension of the E.R.A. chassis is Porsche type. DeDion rear axle is used and springing at both ends of the car is by torsion bars damped by piston type hydraulic shock absorbers. E.R.A. fitted rack-and-pinion steering gears of their own manufacture to these cars. To reduce over-all height of the body the propeller shaft was lowered appreciably by means of a gear drive at each end.

Also of special design interest is the Mercedes entry of Don Lee, Inc. This car is representative of the several 1939 Grand Prix Mercedes which fairly cleaned the courses in pre-war Europe. In the race this car gave a good account of itself and observers were of the opinion that performance would have been still better with a numerically lower rear axle ratio.

The engine is a twelve of approximately 182 cu. in. displacement, 67 x 70 mm. It has four valves per cylinder, operated by overhead cams through finger followers. Arrangement of the cylinders is Vee, and construction is in unit blocks of 3 bores each. These blocks are fabricated by welding steel sheet, plate, and tube, a method successfully employed by Mercedes for many years.

The Mercedes powerplant is  
(Continued on page 136)



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the easiest way ...  
the *haskins* way!**

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For body and fender work, sanding, wire brushing—and a host of other uses—you'll find Haskins machines meeting all your requirements for precision and speed.

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**HASKINS RA-5 Direct Drive Equipment; ½ HP. 3450 R. P. M.; bench-height pedestal, 360° swing.**



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**The Winner  
MAURI ROSE**

Car: Blue Crown Spark  
Plug Special  
Speed: 116.338  
Time: 4.17:52

**Second  
BILL HOLLAND**

Car: Blue Crown Spark  
Plug Special  
Speed: 116.097  
Time: 4.18:24

**PROVEN'  
America's  
Finest**

**AT THE 1947  
INDIANAPOLIS 500-MILE RACE**



**BLUE CROWN SPARK PLUG CO.**

a DIVISION of MOTOR MASTER PRODUCTS CORP.  
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Cable Address "BORINTCO"

blown by two stage compressor sucking from a dual carburetor. This compressor-carburetor and its necessary ducts and delivery apparatus to the inlet ports represent one of the most compact installations of this type ever made on a racing engine. Power of this engine has been variously reported. There can be small doubt that it will give up to 500 hp. at engine speeds in

the region of 7000 to 8000 rpm. A sustained 400 plus should readily be available.

The Mercedes chassis is independently sprung in front by coil springs; at the rear DeDion suspension with torsion bars is used. Hydraulic piston type shock absorbers are fitted front and rear, the latter pair controllable from the driver's seat. The chassis frame is very

stiff, fabricated of steel tube by gas welding.

The Mercedes design employs an evident softness of springing. It is believed this soft springing underlies much of the Mercedes' well-known road holding ability. In the last Grand Prix competitions prior to the war, Mercedes was noticeably superior in control and roadability to the other makes represented.

Also outstanding in design are the two Blue Crown Spark Plug Specials designed and built by Lou Moore for this year's race and which placed first and second. These cars are brand new, attractively finished, and powered by 270 cu. in. four cylinder Offenhauser engines. They are quite low. Steering gear is dual, with a separate drag link to each front wheel.

These cars are front drives, independently sprung by torsion bars in the front. Rear suspension is by conventional semi-elliptic springs. The body lines are pleasingly simple, and body construction apparently was done with good accessibility in mind.

Mauri Rose qualified one of the Blue Crowns at 124.040 mph. This was good enough to land him a spot in the front row, where his running mates were Cliff Bergere, in one of the Novis with a qualifying speed of 124.957, and Ted Horn, on the pole with the Bennett Bros. Spl (8CTF Maserati) at 126.564.

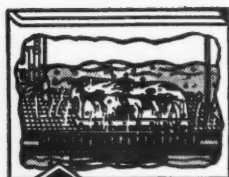
While the Olson entry failed to qualify it had some interesting de-

(Continued on page 140)

## See for yourself-the advantages (of) **GRAY-MILLS AGITOR** PARTS CLEANING SYSTEMS

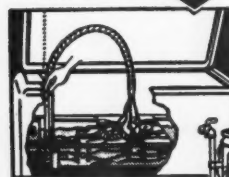


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Small parts are being cleaned with hose and brush.



and carburetors, etc. soak in Agitor Jr.



**See** how you can use the entire tank for agitated soak cleaning of large parts like crankcase pans, (no heating required).

**See** how you can clean small parts at the same time, with flowing solvent. Here is the utility you want!

... **And** see how the new Agitor Jr. simplifies and speeds cleaning of carburetors and other parts requiring Speed-Agitene Solvent for carbon and varnish.

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*add water  
only 3 times  
a year!\**

IN NORMAL CAR USE



## Race Story . . . . . (Continued from page 136)

sign features. The engine is a 4-cylinder Offenhauser of 270 cu. in. displacement. The suspension is unusual in that the rear wheels are individually sprung using four leaf springs on each side at right angles to the frame. The springs are attached to the hub at the outer end through a knuckle, actually giving a four-point suspension of each rear wheel. Two universal joints are

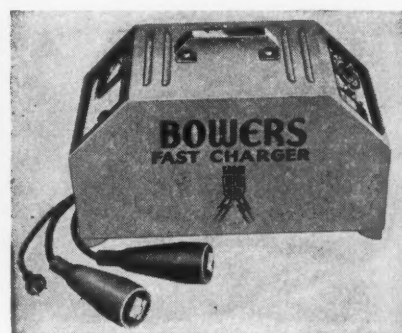
used with each rear axle; one at the outer end and one next to the differential housing. The low total weight of the car, 1600 lbs., is achieved through use of aluminum for the body, bell housing crankcase, and differential case. It has a special air scoop arrangement to direct the flow of air over the transmission and oil tank which is under the seat and it also cools the oil

pan of the engine. A special vent at the rear draws off the heater air. The block and head are cast iron and it is a blind end bore. The car has a 17 in. frame, which is narrower than conventional. It also has a sealed cooling system which operates under nine pound pressure boiling.

### Portable Fast Charger

A new, portable fast charger, manufactured by the Bowers Battery and Spark Plug Co., is now in full capacity production.

The charger, weighing 25 lbs., can be carried anywhere in the



garage, repair shop, or service station. An automatic circuit breaker prevents dangerous overloading. It is equipped with an oversize selenium rectifier and heavy duty power transformer, and the charging time is controlled by an automatic timer which shuts the charge off after the pre-set charging time has elapsed. Rectifier and transformer are designed so that no cooling fan is needed.



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**THE COMPLETE LINE OF TUBE AND TIRE REPAIRS**

## Cooling System . . . . (Continued from page 70)

be repaired, sometimes without removing the unit affected. Small leaks in the core, for instance, although extremely difficult to use a soldering iron on with the radiator in position, may be soldered with a torch if care is taken not to burn the tube through. Leaks along the head-block joint usually mean that a new head gasket is needed, although tightening down

the head may do the trick. Hoses that are soft, frayed or old should be replaced and new clamps installed.

The pump and fan are frequent causes of trouble. The fan belt may be loose and need tightening or replacing. The blades may be bent, decreasing the amount of air moved by the fan. The pump should be checked for worn impeller shaft or

bearing and for loose packing.

Internal leaks are harder to find and usually must be discovered by the symptoms they cause. Thus a cracked water jacket or a leaking head gasket may first show up as a rise in the level of the oil in the case. It may also permit oil to enter the cooling system and first appear as an oil film in the radiator. This is particularly common in those older cars that have oil coolers. Again, cylinder head corrosion may permit gas leakage into the cooling system, though this is usually limited to aluminum heads. More rarely, heat cracks in the valve seats may open up to the jacket.

An additional check on internal leaks can be made by disconnecting the water pump, either by removing the belt or disconnecting the coupling, and removing the top hose and thermostat. The water outlet is then replaced, leaving the top hose off, and the block and radiator are filled up to the level of the water outlet.

The engine is started and put in high, holding the brake on and slipping the clutch to put the engine under load. Very small gas leaks will appear in this test in the form of bubbles at the water outlet. These bubbles will be easier to detect if a little oil is poured in the carburetor air-intake to produce smoke. Excessive amount of water coming from the exhaust pipe and which continue after the engine is hot, is also an indication of a leak-

(Continued on page 144)

# SURE *repair for* *cooling system leaks*

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# TIMKEN

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## TAPERED ROLLER BEARINGS

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

## Cooling System . . . . (Continued from page 142)

ing head gasket or cracked block.

Stopping internal leaks, while more difficult than other cooling system repairs, can usually be accomplished by welding or gasket replacement. On some of the older cars a good deal of ingenuity may be necessary, as, for instance, those having the oil coolers referred to above. When these rust through they can be by-passed on the oil

line or blocked off altogether, as replacement is usually difficult.

Clogging of the system is as common a cause of trouble as leakage, more so perhaps during the summer months. In ordinary operation almost all cooling systems tend to clog up merely because of the mineral content of the water used.

Unless clogging is severe, the use of one of the commercial flushes on

the market will clean out the system quickly and easily. In each case, of course, the manufacturer's directions should be followed explicitly, although the general principle involved is the same for most makes, it being necessary to run the engine hot with the compound circulating through the system a sufficient amount of time to free the rust and scale. This should be followed by a thorough back-flush using water and compressed air, to wash out the freed material, although several of the flushing compounds now on the market are designed to actually dissolve the clogging material so that it can be drained off without backflushing.

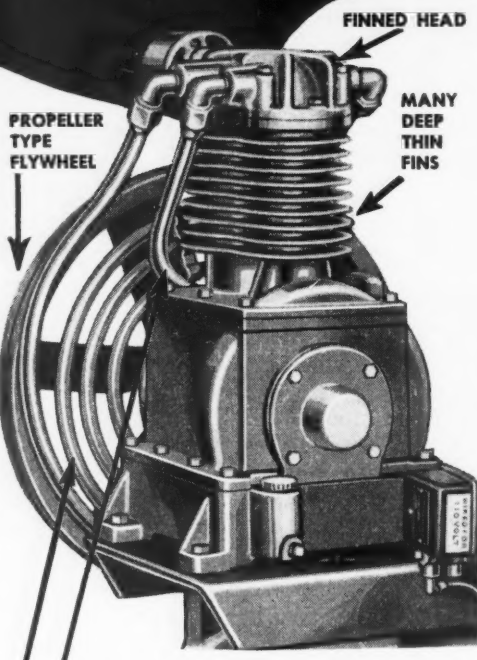
The most common cause of coolant loss and overheating is, of course, clogging of the radiator passages by particles of loose rust and scale carried from the block by the pump. Unless this condition is severe, it can usually be cleared up by using flush compound and pressure as mentioned above. If the clogging is serious, however, it will be necessary to remove the radiator. The channels can then be run through with a steel ribbon to loosen up the rust and scale, after which the entire radiator can be flushed out under pressure. If the radiator is of the type that has "zig-zag" passages, another method must be used. The usual treatment given this type is to boil it out with muriatic or oxalic acid. If muriatic acid is used, the proportions are ten parts of water to

(Continued on page 146)

## A Wayne Feature THAT MEANS COOLER OPERATION

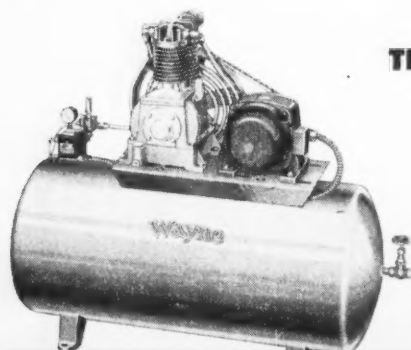
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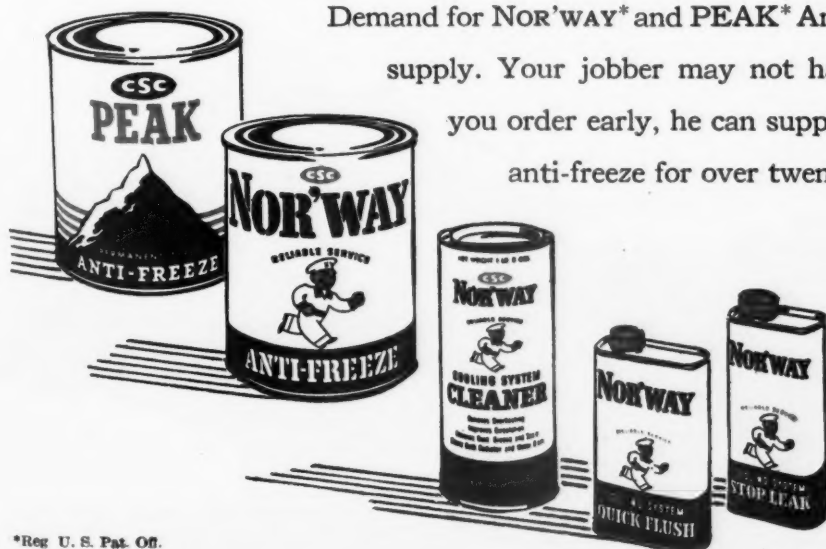
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JUNE, 1947

When writing to advertisers please mention Motor Age



## Cooling System . . . . (Continued from page 144)

one part commercial muriatic (hydrochloric) acid. If oxalic acid is used, the recommended proportions are one pound of commercial oxalic acid to three gallons of water.

To boil out a radiator, both the upper and lower hose connections are closed by soldering sheet brass over the openings or closed by suitable plugs and the radiator is filled

with the solution. It is then placed over a gas flame so that the flame will heat the lower tank, and allowed to boil for two or three hours, adding water from time to time to maintain the proper level. At the end of the boiling period the radiator is emptied, the brass covers removed, and it is repeatedly flushed until all traces of the acid

have been removed from the radiator.

Since the rust and scale that clog the radiator passages are mostly from the block, cleaning out these passages will accomplish little if the block itself is not cleaned out. Otherwise, the passages will clog up again in a short time. The block, therefore, must be thoroughly cleaned out, either by removing the jacket plates on the side, or through the core plugs if the car does not have plates.

After a radiator has been cleaned out it should be tested for leaks by submerging it in water and applying air pressure. The hose connections are closed with suitable plugs. The rust and scale that was removed from the radiator may have been sealing up pin-holes in the core. After the rust is flushed out, these pin-holes will leak and must be soldered before the job can be considered complete.

The thermostat is another source of overheating or overcooling, and should occasionally be removed and checked. This can be done by immersing it in hot water along with a thermometer graduated to 212 deg. F., or higher. The thermostat should open at the specified temperature or overheating will result. A thermostat that is permanently stuck open, on the other hand, will over-cool the engine, making starting difficult and increasing gas consumption. If possible, the instrument board temperature gage should be checked at the same time as the thermostat, by the procedure outlined in the May issue of MOTOR AGE.

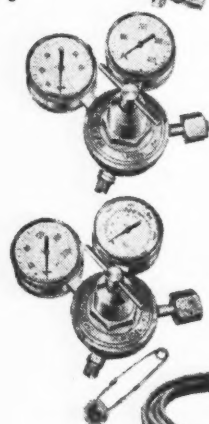
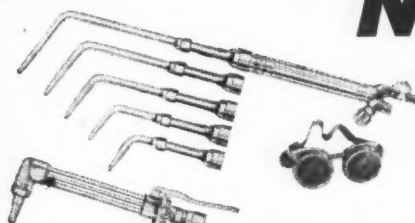
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TAKE ALL AUTOMOTIVE JOBS IN STRIDE  
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**BATTERY CHARGERS**  
**A.C. ARC WELDERS • ELECTRODES**  
**GAS WELDING And CUTTING EQUIPMENT**  
**ACETYLENE GENERATORS • ACCESSORIES**

MARQUETTE MFG. CO. INC.  
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Every batch of DUCO color must pass exacting laboratory tests before it's released to you.



**AVAILABLE!**

One of the 1500 Du Pont stock points is convenient to your shop — all set to supply your color requirements.



**GOOD BUSINESS!**

Customers know that DUCO does a perfect job every time. It's smart to be associated with the best known of automotive finishes—DUCO.

E. I. du Pont de Nemours & Co. (Inc.), Finishes Div.,  
Refinish Sales, Wilmington 98, Delaware.

*Latest addition!*

## **NEW DUCO BLACK**

Most recent development of Du Pont laboratories, this new *DUCO* Black is better five ways:

- \*A blacker black—a better match to new car production
- \*Equally effective on over-all or touch-up jobs.
- \*Dries faster.
- \*No hazing under normal conditions.
- \*Rubs easier—reduces compounding time.



# DUCO

REG. U. S. PAT. OFF.

**MATCHED  
COLORS**

BETTER THINGS FOR BETTER LIVING  
..THROUGH CHEMISTRY

## ASPAR Strike

(Continued from page 57)

by non-ASPAR racing drivers.

At the request of ASPAR, the AAA contest board arranged a meeting between Hepburn and Shaw. ASPAR agreed to participate for the posted purse; the Speedway promised to pay additional money for the qualifying trials, "if it was possible." But the

entry list was not reopened and the drivers were eligible only for standby trials.

On 25 May, ASPAR drivers were permitted to take standby time trials and early on 26 May George Connor became the first ASPAR driver to qualify. Thus at almost the last minute the ASPAR men worked furiously to ready their mounts and to get in their 115 mph laps before Race Day. The purse, swelled by late contributions, to-

talled \$132,600, the largest it has ever been.

The net result of the strike was that the ASPAR drivers lost much valuable time, a shot at the qualifying money, choice starting positions, and probably much sleep. And of the highly touted string of cars controlled by Hepburn, only two, Rex Mays's Bowes Sealfast Special and Duke Dinsmore's Schoof, finished in the money.

## Cap Kimball Completes Thirty Years with Pontiac

Believed to have the longest continuous service record of any automobile advertising executive, B. B. (Cap) Kimball, Assistant Advertising Manager of Pontiac Motor Division, recently celebrated his thirtieth anniversary with Pontiac.

Just out of West Point, "Cap" went to work for Pontiac's predecessor, Oakland, on May 27, 1917. He started as a timekeeper in the payroll department, but shortly shifted to advertising and has remained there ever since.

His acquaintanceship among newspaper and magazine representatives is, perhaps, the largest in the country, and he has seen the Division's advertising appropriation grow from a few thousand dollars to many millions.

## Bowes "Seal Fast" Builds On Coast and in Canada

The recently completed Canadian Bowes "Seal Fast" plant provides quarters for Bowes "Seal Fast" Company, Ltd., in Hamilton, Ontario. This organization, started in Canada in 1927, by representatives of the Bowes "Seal Fast" Corporation of Indianapolis, has made steady progress and in 1946 recorded its biggest year in sales.

A similar building, but with somewhat more floor space, is now under construction in Riverside, California, it has been announced by Charles E. Bowes, president of the Bowes organization in Indianapolis. This will be completed soon and will serve as the home of the Bowes-Pacific Corporation in Riverside. The factory of the Bowes "Seal Fast" Company of Great Britain is on the outskirts of London.

**Tommy Tuneup says - A Great Fuel Pump Setup!**

IT'S been a mint for me—this Hygrade setup—and it will make money for YOU, too. Here's the picture—When a customer has fuel pump trouble I give him immediate service by replacing his worn pump with a new one from my assortment of Hygrade "Monoflex" Pumps.

Then I put his old pump into the "Monoflex" box, and rebuild it in spare time. The label on the "Monoflex" box gives me the number of the Contain-All Kit for that particular pump. So, I select this kit from my second assortment, and in less than no time I have another pump, as good as new, for a future replacement.

A120—(picture at top, left)—20 "MONOFLEX" FUEL PUMPS in 14 of the most popular numbers. FP575A—(picture at top, right)—20 CONTAIN-ALL KITS in 9 popular styles, to service old pumps.

Put these money makers to work in YOUR shop.

HYGRADE PRODUCTS CO., INC.  
35-35 Thirty-Fifth St., Long Island City 1, N. Y.

# HYGRADE

REPLACEMENT PARTS



ENGINEERED FOR OLD UNITS

FUEL PUMPS  
KITS AND PARTS

CARBURETOR  
KITS AND PARTS

FILTERS—COMPLETE LINE

SPEEDOMETER  
CABLES—CASINGS—PARTS

SHOCK LINKS  
BUSHINGS AND PARTS

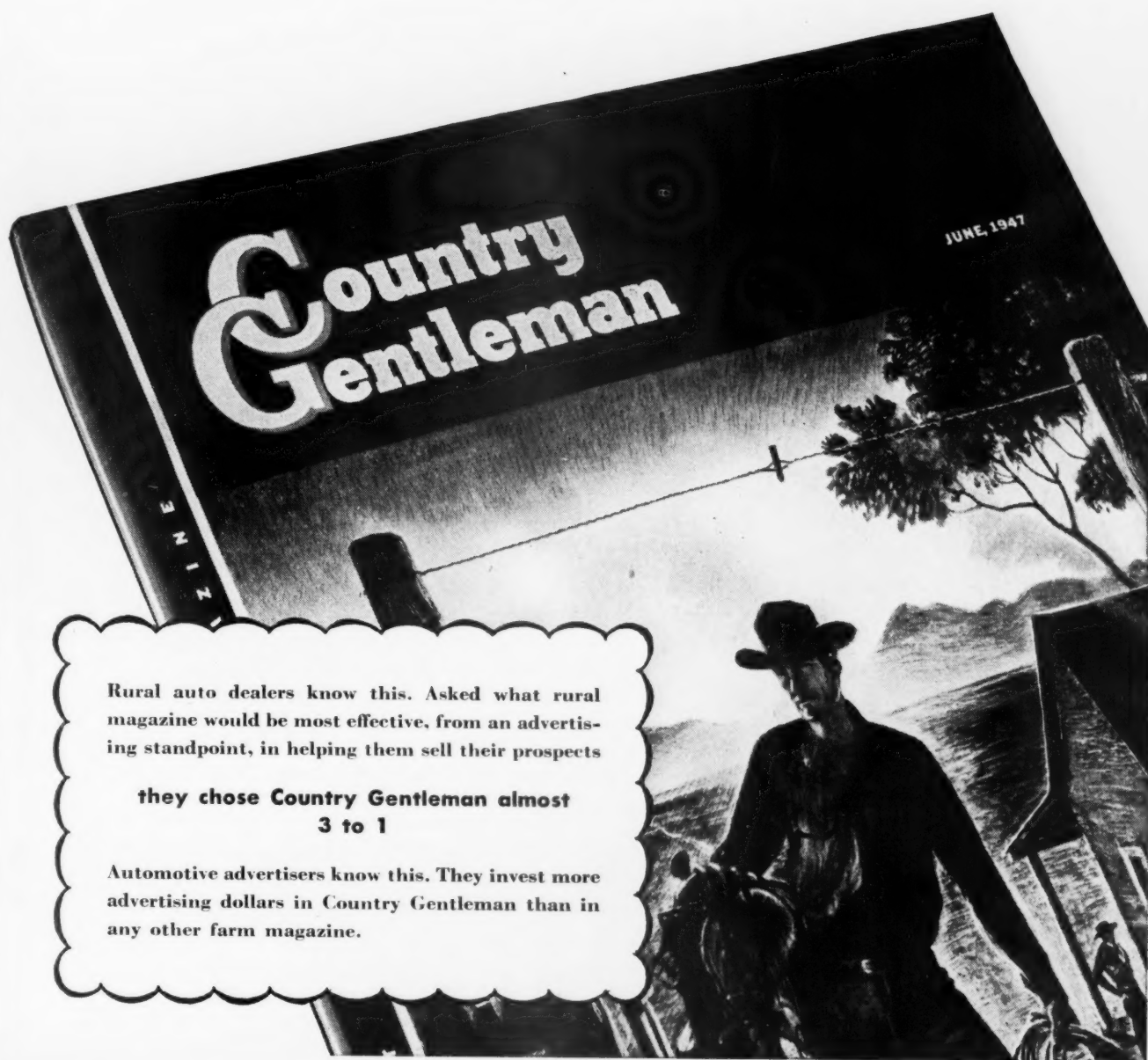
FUEL LINES AND FITTINGS

TOOLS AND TESTERS TO COVER  
ALL HYGRADE PRODUCTS

ASSORTMENTS FOR EVERY NEED

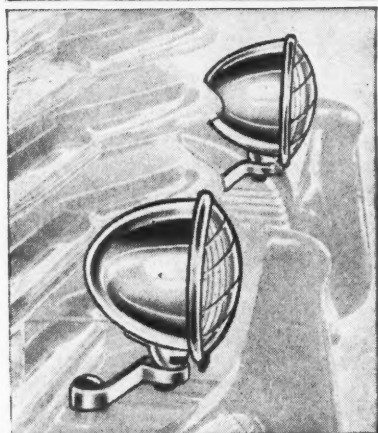


# Your best rural customers read...



# DEALERS! You Get a Bigger Market

THEY FIT '47 CARS  
AND MATCH  
THEIR BEAUTY!



## FOG-KING by Teleoptic

SERIES 100

\* Except Nash, Mercury, Lincoln, Studebaker

• For greater visibility — they're big in size. • For Beauty, they're chrome-plated. • For durability—copper shells — stainless steel doors. • Fits earlier models too.

DEALERS can order displays direct from factory—only \$4.60 plus postage, including one light.

... and Bigger Profits with

## TELEOPTIC Auxiliary Lights

ALL Teleoptic Quality First Products are now yours to sell — INCLUDING TO THE FLEETS—at Fair Traded Prices. Get latest prices from your jobber.

We are cooperating with Collier's "PREVENTIVE SERVICE" Program. Watch this National Advertising for Teleoptic.

## FOG-KING FOG LIGHTS

## TELEOPTIC TURN SIGNALS

## KLEER-KING Clearance LIGHTS

and many other types of lights.

THIS IS YOUR OPPORTUNITY! Stock up today for the growing demand!

## THE Teleoptic Company

1257 MOUND AVE. RACINE, WIS.

## Champion Rebuilds Electrical Units

The Champion Armature Company of 4632-42 Pacific Blvd., Los Angeles, Calif., is a parts rebuilding firm which provides jobs for about 100 employes. By utilizing the most modern machinery and streamlined production methods, these employes, under the direction of owner Harry P. Lester, can produce more than 15,000 generators and starters and 20,000 additional armatures per month.

Units that are to be re-manufactured start their trip through the firm's 25,500 square foot plant in the dismantling department. Here the starters and generators are disassembled and thoroughly cleaned. By using modern cleaning equipment, improved chemicals and degreasers in combination with sand blasting and buffing, this department processes over 1000 units a day.

After cleaning, the housings are carefully inspected and routed to the main assembly room, where the field windings, armature and brushes are installed and the unit again begins to look like a starter or generator. This assembly room is divided into many sub-stations, where individual parts for all models of generators and starters are produced so that they will feed in at the proper time to keep the main assembly line moving.



Armatures and field coils are expertly wound and soldered, preparatory for a visit to the large, continuous-operation type oven. This oven, with a production capacity of 2400 armatures per day, is equipped with moving racks which are exposed at one end. The racks are loaded with the armatures and start through the pre-heating section of the oven. When properly heated, the automatic conveyor moves the armatures through a varnish bath which penetrates the windings. As the conveyor continues, the armatures pass through an oven which bakes this first coat of varnish. Again they pass through a varnish bath and are given a final baking which requires several hours, and finally they emerge from the oven, thoroughly insulated and impervious to moisture. They are then ready to contribute their part to the long life of Champion generators and starters.

(Continued on page 152)

PERFORMANCE

PROTECTION

MOTORISTS NEED . . .

PROFITS YOU CAN USE

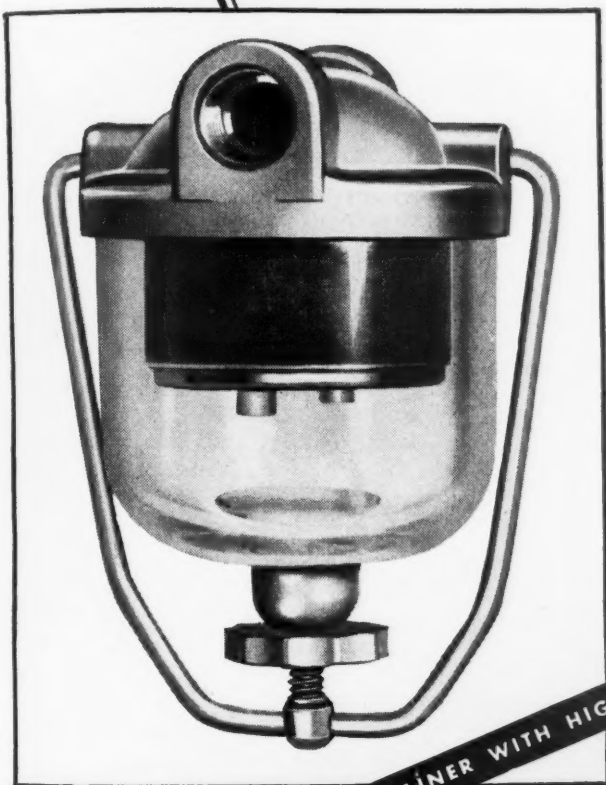
Here is the only Gasoline Strainer with the high-efficiency "Fiberite" Element . . . 100% non-abrasive, waterproof, acidproof and rustproof. It enables you to sell real performance protection.

The AC Gasoline Strainer prevents engine failure. It keeps gasoline clean and so prolongs the life of carburetor jets, needle valves and valve seats. It filters out dirt, lint, abrasives and water. It preserves easy starting and peak carburetor performance. It is easily installed.

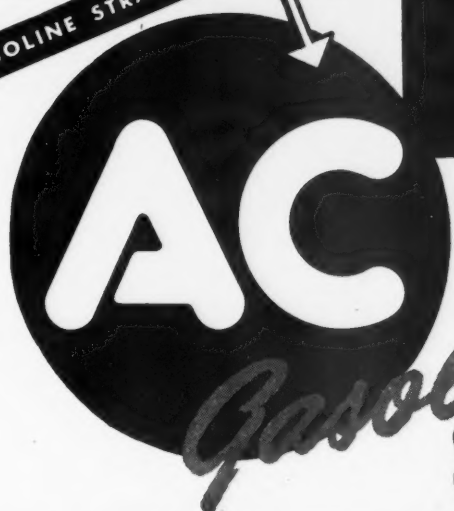
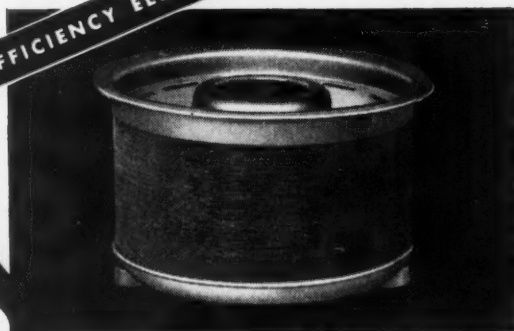
And here's how easily you can cover the market:

- 7 Complete Gasoline Strainer packages (containing all necessary fittings) cover all passenger car and light truck installations.
- 1 Additional Strainer package (containing all but special fittings) covers all other engine installations.

Sell this performance protection for extra profits. It has the added advantage of repeat business in Replacement Elements which are individually packaged for this purpose.



AC GASOLINE STRAINER WITH HIGH-EFFICIENCY ELEMENT



*Gasoline*

**STRAINERS**

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION



for profit-building  
power  
gear up  
with



BRAKE  
PARTS  
BRAKE  
FLUID  
BRAKE  
TOOLS

THE LINE OF  
DEPENDABLE  
SERVICE

**B**RAKE stations and general repair shops that have used Eis Products regularly through the years recognize the Eis Line as a powerful factor in building volume and profits.

The always dependable performance of Eis Brake Parts establishes you as a brake specialist in the minds of your customers. As your reputation grows, your business grows.

Gear up with the Eis Line and get into the higher brackets of profit in this important branch of overhaul.

From your jobber. Write us for literature.

THE EIS AUTOMOTIVE CORP., MIDDLETOWN, CONN.

**SIEBRING**  
PORTABLE

**STEAM CLEANER**

**CUTS Cleaning Time In Half! SPEEDS All Repair Work!**

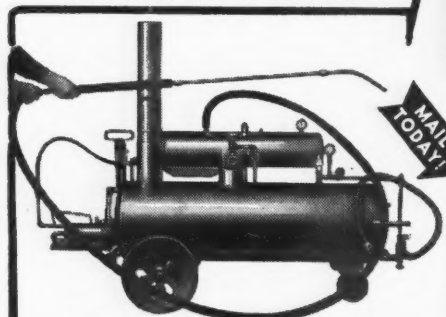
*For Cars, Trucks and Tractors*  
• Motors, Parts and Springs  
• Before Painting  
• Steam Washing

Here's a time-saving, job-speeding, money-making piece of equipment every garage, service station or repair shop should have. It provides instant steam, hot-water, or both, **UNDER PRESSURE** with powerful, cutting chemicals. Knocks grease and grime from motors, machinery or parts in a hurry. Service-free! Simple to operate! Safe and economical! Try it in your plant **AT OUR RISK**. Write for literature and 10 Day "Free Trial" Offer!

**Amazing LOW COST**  
**PORTABLE UNIT**

★ OPERATES economically! Burns low-cost fuel oil or gas! Electric units also available!  
★ NOT dependent on city water pressure or electricity. ★ **PORTABLE** — Easily moved about. ★ Conforms to "Boiler Code" Recommendations in all states.

**IMMEDIATE DELIVERY**



**SIEBRING MANUFACTURING CO.**  
503 MAIN STREET - GEORGE, IOWA



**SIEBRING MFG. CO.**

503 Main St., George, Iowa

SEND descriptive literature and 10 Day "Free Trial" Offer to

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

MAIL THIS COUPON or  
WRITE for LITERATURE and  
TEN DAY TRIAL OFFER

## Champion Rebuilds Electrical Units

(Continued from page 150)

An important part of the plant is the water wash-spray painting booth which utilizes the most modern methods available. A constant spray of water eliminates the necessity of the operators wearing masks, and eliminates the fire hazard. All fumes are drawn off through large vents. The painting is done in two stages, each unit being handled by two operators.

When completely assembled the units go to the testing department, which contains 25 individual test stands. All generators are run for 20 minutes, to be sure they meet Champion's standards, and are given final adjustment while running hot, as in actual operation on a car or truck.

## Of Days That Used To Be

The old and the new in transportation was the subject of an address Wednesday by Harold T. Youngren, Ford vice-president and director of engineering, before 400 members of the Engineering Society of Detroit. Mr. Youngren's talk highlighted a program that included a tour through the Edison Museum, an inspection trip around the Ford test track and a visit to the Ford wind tunnel.

Mr. Youngren contrasted the performance of Post World War I automobiles with that of Post World War II models.

"In the early twenties, 18,000 miles from any tire was considered phenomenal. Present-day tires frequently last for 50,000 or more miles. And by cutting pressures in half we've more than doubled their riding qualities.

"In the old days of rod bearings, main bearings and rings were considered remarkable if they lasted 8,000 miles. Nowadays an engine that won't provide at least 50,000 miles of trouble-free operation isn't considered much of an engine."

Speeds, he said, have upped from a top of 60 to common-place cruising at 70, provided a good road is available.

Performance-wise, he said, the contrast is significant. For in-

(Continued on page 154)



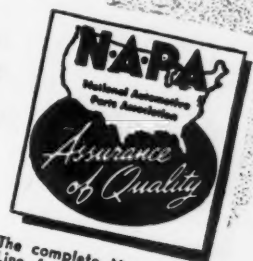
You'll sense—instantly—a sure "feel" of lightweight power and bulk-free balance the moment you pick up this new FLEX HANDLE! It's just one of the many redesigned members of this famous Line that has consistently brought you—Mechanics Hand Tools that Make Money.

Note the remarkably slim, new OVAL design . . . it's streamlined, yet strength has actually been *increased* . . . clumsy bulk of the old round shape has been scientifically eliminated and steel added in the direction of strain. The new oval grip, too, is beautifully designed to fit the hand more securely.

Stronger, slimmer—amazingly effective in the tough spots—that's the story on the whole New Britain Line today!

Excess material, top and bottom, in old round shape, did little or no work. Removing this surplus greatly reduces useless bulk. Slight reinforcement added to each side in new Oval design—in direction of push and pull—develops amazing new strength.

There's knuckle and job insurance in these really modern Tools of Greater Strength—Better Fit . . . ask your NAPA Jobber to show you the Line. The New Britain Machine Co., New Britain, Conn.



The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

# New Britain

## GREATER STRENGTH • BETTER FIT HAND TOOLS



## greatest **POWER** booster

... in motor history!

Graph-Tex 303 ... is a MUST for truck and car engines ... no motor heat is too great for Graph-Tex 303 ... add to gas and oil for perfect lubrication ... once tried, always used ... saves money for motorist, makes money for dealer and jobber ... sold on a money-back guarantee basis ... add to gas and oil sale ... build yourself extra profits with Graph-Tex 303.

Distributors ... some profitable territories still open. Write,



**GREENLEAF**  
*Corporation*

PITTSBURGH 21, PENNA.

## Of Days That Used To Be

(Continued from page 152)

stance: "The average Post World War I car took 10 seconds to climb from 10 to 25 miles per hour. Today's average car does it in six.

"Twenty-five years ago shifting gears was considered a fine art. Virtuosos were few and as a result the expression be careful, 'don't strip your gears,' became a part of American speech. For the most part shifting remains manual, but the pain is gone.

"Frames, too," he said, "have improved tremendously, thanks to improved engineering. Today's X-type frames with boxed in sections are perhaps 10 times as rigid as yesterday's small open channel type.

"The dependability of present engines is generally accepted as a foregone conclusion. Besides being tougher they're more efficient. For example, the famous Model-T engine developed one-tenth of a horsepower per cubic inch displacement. Compression ratio was 4 to 1.

"Our current 1947 V-8 engine develops .42 horsepower per cubic inch, and has a compression ratio of 6.7 to 1, an increase of 400% in efficiency.

"Although vehicle mileage remains about the same, real economy has improved considerably during the past quarter-century," Mr. Youngren said. "For example, a check of the average gasoline mileage delivered by our 1947 V-8 at 20 miles an hour indicates we are moving 136 pounds of weight of car per mile per gallon, as compared with only 80 pounds weight of car per mile per gallon for the Model T.

## Barrett Axle Thread Protector Sets

The Barrett Equipment Co., 2101 Cass Ave., St Louis 6, Mo., is producing Barrett Axle Thread Protectors designed to safeguard axle threads during wheel pulling operations. The protector fits into place between the shaft and the wheel puller, to prevent damage to the thread and the consequent loss of time. Packed in sets of six sizes from  $\frac{5}{8}$  in. to  $1\frac{1}{4}$  in., these protectors handle all standard axle shafts.



Clutch Head bits, Flat bits, Phillips bits and a Tapered Reamer ... a carefully chosen assortment of high-grade steel tools ... all in the tread-grip, hollow, red plastic handle of this compact, durable Kit. And, it simplifies auto repairing and maintenance. Insert the tool you want in the locking swivel bit-chuck ... and it is ready for use.

If your Dealer does not carry these Kits, or is sold out, send his name, along with your own, and you will be taken care of promptly.

An Ideal Gift or Prize



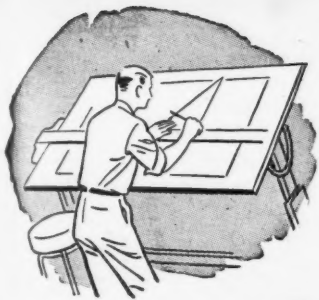
## "SOCKET WRENCH" KIT

Hallowell "Socket Wrench" Kits for External Hexagonal Fasteners are also available. Write for descriptive literature.

OVER 44 YEARS IN BUSINESS

**STANDARD PRESSED STEEL CO.**  
JENKINTOWN, PENNA., BOX 561





## *Automotive Engineers Prefer 'Em*

Guide Sealed Beam units are original equipment on more new cars, trucks and buses than any other make.



## *Dealers Say They're More Durable*

Sturdy metal reflector construction with metal locating lugs minimizes breakage in handling and installing.



## *Customers Like Their Double Protection*

Guide units give Sealed Beam lighting at its best: NO DIM-OUT throughout their long life—NO BLACK-OUT if a lens is cracked.

... three good reasons why you should use Guide Sealed Beam units for all replacements on Sealed-Beam-equipped cars, trucks, buses.

# GUIDE SEALED BEAM HEADLAMP UNITS



*Guide*  
LAMP  
Division of General Motors  
Anderson, Indiana



**GUIDE LAMP—A UNITED MOTORS LINE**  
Available Everywhere Through  
**UNITED MOTORS DISTRIBUTORS**

## CORDS PISTON RINGS

*The Modern Way!*  
**ENGINEERED  
PISTON RING SETS**



*Sealed  
IN PACKAGES*

New scientifically designed, precision made, Thermo-Formed Cords Piston Rings now available for all motor vehicles. Exclusive patented Concave Steel Segment Rings in Cord combination sets stop cylinder wear—save gas and oil

There are CORDS for every car  
Every car needs CORDS

**CORDS**

PISTON RING MANUFACTURING CO.  
371 EIGHTH AVENUE • SAN DIEGO, CALIFORNIA



U.S. Pat. No. 2,093,547 — Canadian Pat. No. 223,568

**INTERNATIONAL CHAIN & MFG. COMPANY**  
YORK, PENNSYLVANIA

## NEW LIGHTNING Arc Torch



ONLY  
**\$995**

### WELDING, BRAZING, SOLDERING

*Now Possible Electrically*

Now every electric welder can also do jobs that formerly required gas welders—and at greatly reduced costs. Instant, automatic starting of the arc. Smooth intense heat that's easy to control. There's no danger of burn-throughs on thin metals because there is no pressure from the carbon arc flame and even thin aluminum sheets can be welded without backing. For preheating, bending and hard surfacing. Can be used with either AC or DC welders. Available for 1/4" or 3/8" carbons. DC torches fitted with positive and negative carbons.

*Sold Thru Your Jobber*

Write for Bulletin No. 11



**CESCO PRODUCTS, INC.**  
Dept. M, 30 N. La Salle Street  
Chicago 2, Ill.

You Can Rely On

## FRENCHTOWN INSULATORS

Used by more spark plug manufacturers than any other.

**FRENCHTOWN PORCELAIN CO.**

81 Mulrhead Ave., Trenton, N. J.  
(Factory: Frenchtown, N. J.)

### KEEP OIL FREE FROM ABRASIVES



**PUROLATOR PRODUCTS, INC.**  
Newark 2, N. J.

Founder and leader of the oil filter industry

### General Motors to Exhibit Products at Atlantic City

Announcement was made recently by S. D. Hopkins, director of the Sales Section of General Motors Corporation, that arrangements have been concluded with the Atlantic City Steel Pier Company for the opening of an exhibit of GM products on the Boardwalk in Atlantic City, New Jersey.

The exhibit space, approximately 18,000 square feet, is on the Steel Pier. In addition to their automobiles—other GM products such as Frigidaire electric refrigerators and ranges, Delco oil burners and stokers, and GM Diesel engines will be on display. There will also be exhibits by Fisher Body and other Divisions of the Corporation. Gardner M. Cobb will be manager of the exhibit.



### They Can't Drive Without TIRES!

New Tires are still hard-to-get! Keep your customers' cars running with KEX Tire Plus. —They are the quickest, permanent method for sealing punctured casings at lowest cost. Wholesalers sell KEX.

**The WEDLER-SHUFORD CO.**  
2222 Olive St., St. Louis 3, Mo.



## SPINNING POWER

a Companion Product  
of Full-Spark Plugs  
GLOBE UNION INC.  
MILWAUKEE 1, WIS.



### THE COMPLETE LINE that Completely Satisfies

Since 1906

The  
**Fitzgerald Mfg. Co.**  
Torrington, Connecticut



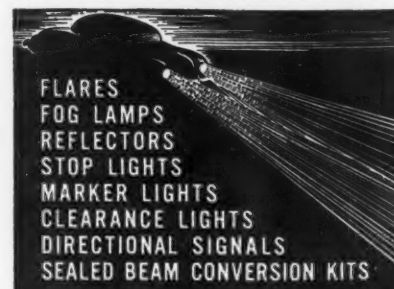
**Fitzgerald**  
GASKETS

## The NEW Exide

The dependable battery that  
millions of car owners want.

THE ELECTRIC STORAGE BATTERY  
COMPANY, Philadelphia 32  
Exide Batteries of Canada, Limited, Toronto

WHEN IT'S AN EXIDE...YOU START



**ARROW SAFETY DEVICE CO.**  
MOUNT HOLLY, N. J.

# Sell the Slow-Down



★ Actually 6 out of 7 brake applications are slow-downs—only one is a stop.

Actually, your customers *drive* with their brakes . . . use them for control . . . use them to ease around or over bumps, and hills, and curves. They want *full-range* brake control—easy, positive slow-downs; quick, smooth stops.

It takes a combination of brake linings to give *full-range* control. Raybestos builds all seven different types of lining . . . engineers each with special friction qualities . . . scientifically combines them in fast-moving PG sets.

Sell the slow-down, not just the stop. Sell a Raybestos reline and give *full-range* brake control.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.  
BRIDGEPORT, CONNECTICUT

CHECK BRAKES  
RELIN WITH



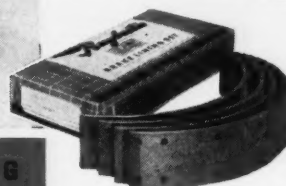
RAYBESTOS-MANHATTAN, INC.

## Raybestos

AMERICA'S BIGGEST SELLING BRAKE LINING

**NEW! Raybestos Ray-BOND**  
Sets Available Now

Raybestos is ready with new undrilled sets in correct combination, for use with bonding equipment.



**PG** PROVING GROUND TESTED BRAKE LINING, BRAKE BLOCKS, CLUTCH FACINGS, FAN BELTS, HOSE for Cars, Trucks, Buses and Tractors



CLUTCH FACINGS • RIVETS

BRKE SHIM STOCK • RELINING EQUIPMENT

HYDRAULIC BRAKE PARTS • BRAKE FLUID

BYE BYE CHILDREN  
SCHOOL IS OVER  
'TIL NEXT FALL

DON'T THANK ME  
SONNY... THANK  
SOUTHERN  
BRAKE LINING

**SOUTHERN**  
FRICTION MATERIALS CO. - CHARLOTTE, N.C.

**Shurhit**  
Triple Seal Moisture-Proof  
**CONDENSERS**

Ask your Shurhit jobber or write us for details on these super-quality replacement parts. Complete Shurhit line includes Condensers, Contact Points, Rotors, Caps, Coils, Brushes, Cut-Outs, Switches, and Spark Plugs.

**SHURHIT PRODUCTS, INC.**  
Waukegan, Ill.

**When in DETROIT**

Whether on business or pleasure-bent, make this "Goodwill Hotel" your headquarters. Located right in the center of everything... a block east of Woodward Avenue on Elizabeth Street, overlooking Grand Circus Park, Hotel Wolverine is accessible to all sections of the city.

500 rooms... each with tub and shower. Good food. Ample parking space; garage service also available.

Home of THE TROPICS... most unusual night spot in Detroit. Romantic South Seas atmosphere.

**HOTEL WOLVERINE**  
"The Goodwill Hotel"

RATES FROM  
\$2.50 SINGLE • \$4.00 DOUBLE



**Smash-Proof**  
**CREEPERS**

Sold by all leading jobbers  
**HULBERT MANUFACTURING CO.**  
Ashstobula, O.

### 1948 Plymouth May Have. Bonded Brake Linings

It looks now as though Plymouth is planning to use bonded brake linings in the near future—possibly on its 1948 model. The company has installed special heating equipment which will bring the shoes quickly and uniformly to the temperature required in the bonding process.

### Production Troubles Slow New Model Introduction

Production troubles which have hampered automobile output this year also are having their effect on preparatory work for introduction of 1948 models. One company that had planned to introduce its new model this summer has been forced to set the date back to October or November, according to one report. With the seller's market still holding firm for most companies the usual push from sales departments currently is lacking and there is no particular urgency to rush work on new models. It is believed, however, that if the market should sag unexpectedly during the next few months, new model work would be pushed vigorously in order to stimulate sales.

**WORLD'S WIDE**  
**WELLS**  
**QUALITY TELLS**  
**DEMAND WELLS**  
**WELLS MFG. CORPORATION**  
FOND DU LAC, WIS.

USE  
PROVED  
IGNITION  
PARTS

**Cal-Van**  
**GARAGE TOOLS**

GEAR PULLER  
2 and 3  
FINGER  
TYPE

WRITE FOR  
CATALOG

**Cal-Van**  
MACHINE PRODUCTS  
JACKSON, MICHIGAN, U.S.A.



WOLF'S HEAD  
IS 3 STEPS AHEAD

**WOLF'S HEAD**  
MOTOR OIL AND LUBES

100% PURE PENNSYLVANIA  
P.G.C.O.A. Permit No. 6

Ask about the  
**FOX**  
RAPID  
BATTERY CHARGER

**FOX PRODUCTS COMPANY**  
PHILADELPHIA 41, PA.

FOR AUTOMOTIVE PARTS  
AND SUPPLIES...

Your NAPA Jobber  
is a Good Man to Know!

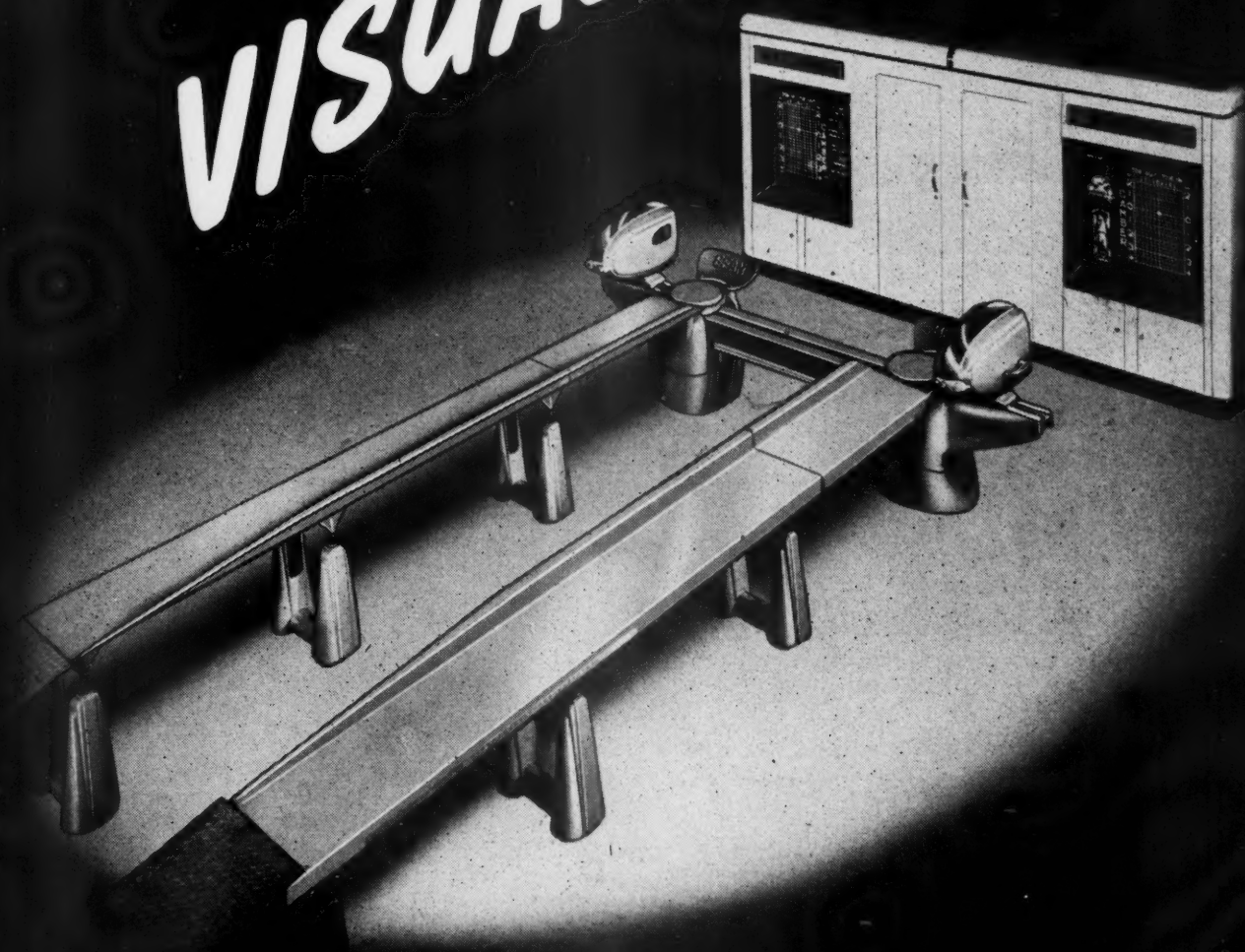
**NAPA**  
Is the Largest  
Independent Organization  
in the Parts Industry

# *New Accuracy-New Speed-New Sales Appeal*

You get a triple value when you install the New John Bean VISUALINER in your Steering Service Department. In addition to cutting working time in half and increasing sales, you get a more accurate aligning job. That's because four precision light ray systems graphically show alignment conditions magnified seven or more times—you can make corrections as fine as a gnat's eyebrow. Ask your jobber or write us for full information about the New VISUALINER.

*John*  
**BEAN**

# **VISUALINER**



## **JOHN BEAN MFG. CO.**

DIVISION OF FOOD MACHINERY CORPORATION

**LANSING 4, MICHIGAN**

WHEEL ALIGNERS AND CORRECTION TOOLS...WHEEL BALANCERS AND  
BALANCING TOOLS...WEIGHTS...STEAM CLEANERS...CAR WASHERS



Make  
**BODY SOLDERING**  
*Faster . . . Easier*

with a  
**BINGO SOLDER KIT**



Just slip a Bingo Solder Tip assembly, using the Bingo No. 2 tip, over the tip of your welding torch and you're ready to do a fast job of body soldering. Use of the No. 1 tip quickly converts the Kit for light soldering. Uses Acetylene Only.

COMPLETE KIT  
Consisting of heavy  
and two tips. } **\$275**

**JOBBERS!** Write for complete merchandising plan.



4465-67 LINCOLN AVE., CHICAGO 25, ILL.

When the Motor is Down  
Build it Up with...

**Allied**  
**MOTOR PARTS**

**ALLIED MOTOR PARTS CO.**  
DETROIT 1, MICHIGAN

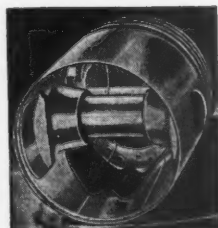
**STOP**  
PISTON SLAP  
OIL PUMPING  
MOTOR NOISE

WITH

**MASTER RECAMS**

MASTER RECAMS are individually designed for all late model cars; easily installed without removing pistons. The profitable way to Stop Piston Slap, Oil Pumping and Motor Noise.

**50¢ EACH**



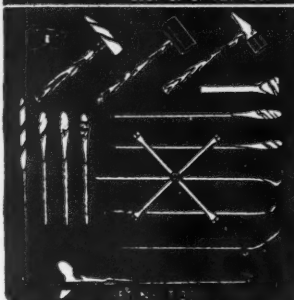
REGULAR DISCOUNTS TO JOBBERS  
AND DEALERS

**WHERRY ENGINEERING COMPANY**

3227-29 Morganford Rd., ST. LOUIS 16, MO.

**KEN TIRE TOOLS**

REG. U. S. PAT. OFF.



LEAD THE  
FIELD  
ADVANCED  
DESIGN  
QUALITY  
UNSURPASSED  
SEE YOUR LOCAL  
JOBBER OR  
WRITE FOR  
LITERATURE  
**KEN TOOL  
MFG. CO.**  
TAYLOR, ILL.

### Few Suppliers Follow Car Makers Price Cuts

When Ford and International Harvester reduced prices earlier this year, both requested suppliers to take similar steps wherever possible. The response is said to have brought about some price reductions but to no great degree. Chrysler Corporation also reports that some suppliers followed its plea for lower prices following a price reduction on Plymouth cars, but the amounts involved thus far are not enough to bring costs down to any significant degree.

### Scrapping of Cars Lags Far Behind Normal Rate

R. L. Polk & Co., automotive industry statisticians, reported recently that only 786,866 passenger cars were scrapped between 1944 and 1946, against a normal average of more than 2,000,000 annually.

The Polk figures show that as of December 31, 1946, there were 25,142,527 passenger cars and 5,067,065 trucks registered in the United States. The total of 30,209,592, much higher than has been generally believed, compares with the record top of 28,968,114 passenger cars and 4,838,37 trucks in use at the end of 1941.



**VAN EXCHANGES**

Since 1919

- STARTER DRIVES
- DISTRIBUTORS
- SHOCK ABSORBERS
- FUEL PUMPS
- UNIVERSAL JOINTS
- CURRENT REGULATORS
- WIPER MOTORS
- CARBURETORS

Sold thru leading jobbers. If your jobber can't supply you with VAN rebuilt parts write us and give his name.

**VAN BERGEN & GREENER, INC.**  
1619 N. Hoyne Ave., Chicago 47, Ill.

358 Venable N.W. ATLANTA 2727 Oak St. KANSAS CITY 2308 N. 18th St. PHILADELPHIA

• **RUGER** •  
*Hydraulic*  
**FLOOR CRANES**

**RUGER EQUIPMENT CO., Inc.**

408 Leader Bldg. P. O. Box 3821  
Cleveland 14, Ohio Portland 8, Ore.

*Genuine*  
**SERVICE**  
INDIANAPOLIS  
*"Measurably Better"*  
**SPRINGS**

**SERVICE SPRING COMPANY**  
INDIANAPOLIS 6, INDIANA

for **SAFETY**  
REFLECTORS • LAMPS • FLARES



**GROTE Manufacturing Company, Inc.** Bellevue, Ky.  
Automotive Sales Office: Moorestown, N. J.

If you've tried them all  
You'll stick to

**HALL**

for Valve and Cylinder.  
Servicing Equipment

**THE HALL MFG. COMPANY**

TOLEDO 7, OHIO

**HYDRAULIC BRAKE CYLINDER  
CLEANER AND POLISHER**



Pat. No. 2348132

Muck and scale quickly removed and brake cylinder polished to a mirror finish in a few seconds. Eliminates wasteful outside trips. Does the entire job in your own shop.  
**\$3.25 FROM YOUR JOBBER**

**THE HYLAND MANUFACTURING COMPANY**  
818 John Street Portsmouth, Ohio



# NEARLY 10,000,000

(one in every three)

## EMERGENCY CALLS

### for battery and ignition service!

Based on reports of emergency calls made by 14,000 garages, the American Automobile Association estimates that *one in every three* calls is due to battery trouble or ignition failure. Take a look at these figures!

All breakdowns during 1946	32,325,000 calls
Battery trouble	5,789,000 calls
Ignition failure	4,000,000 calls

OFFICIAL



FIGURES



To you, these nearly 10 million calls due to battery and ignition failure mean it pays well to "Check the wire on every job!" It means more money for you . . . means you enjoy increased customer good will because you keep motorists out of trouble. So, remember! *Check the wire on every job!*

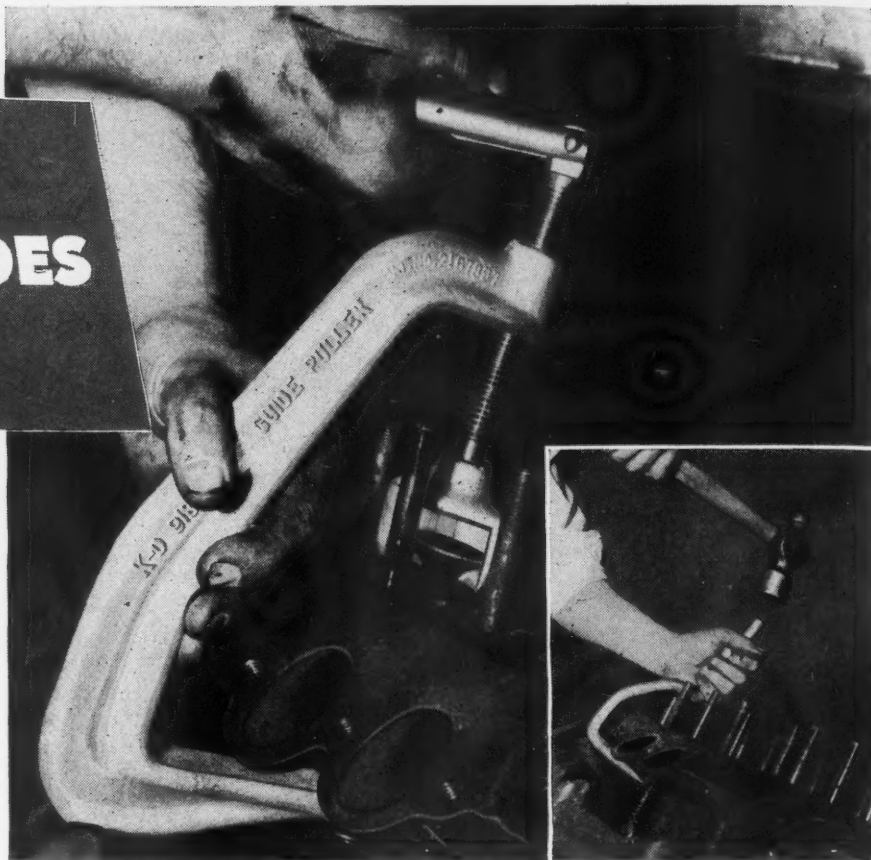
  
**CRESCENT**  
*Wire Joe*  
**AUTOMOTIVE CABLE**

MANUFACTURED BY  
THE CRESCENT COMPANY, INC.  
PAWTUCKET, RHODE ISLAND



## PULL FORD GUIDES FAST!

K-D Valve Guide Puller Sets make quick work of removing valves from all Ford-built motors. With a few hammer blows on the K-D 917 Driver, guides are removed. Jaw of the 918 Puller fits under guides, pressure cup around valve head. A few turns on the screw handle pulls the most stubborn guides—up and out. Easy!



Here's the K-D 925 Valve Assembly Replacing Tool that REPLACES Ford assemblies where a bar won't. (NOT for removing!) Hooks on head stud, downward pressure on the handle does the trick. Strong channel and tool steel construction.



K-D 245 Bar Type Valve Spring Lifter replaces valve assemblies fast in Ford V-8 and Mercury only. (NOT for removing.) 30" long, jaws alike at each end. Strong double-life tool of chrome vanadium steel. At your Jobber's.

K-D Valve Guide Puller Sets apply the correct mechanical principle to this difficult job. They get right over the point of resistance and pull straight up . . . removing assemblies no matter how tightly stuck. Correctly designed and strongly made of drop-forged and tool steel. At your Jobber's.

K-D 920 Set shown above services Ford V85, Mercury, Lincoln-Zephyr, Ford 4 cyl. and Tractor. Consists of one 917 Driver, one 918 Puller, 16 retainers and Valve Service Bulletin. Service the Ford V-8-60 HP with the K-D 860 Puller Set. Same in mechanical principle as the 920 set above. Consists of 862 Driver, 861 Puller, Valve Service Bulletin.

### K-D MANUFACTURING COMPANY

Lancaster, Pa. Hamilton, Ont.

Write for a description of the K-D Line.



# K-D TOOLS

*The Hustlers for Your Toolbox!*

# *You can cash in on* THE GREATEST ADVERTISING CAMPAIGN EVER PUT BEHIND CAR WASHING

**FIRST ADS RUN IN JUNE—  
TO 29,300,000 PEOPLE**

**BIG SUMMER ADS  
IN LIFE AND THE POST  
WILL HELP YOU SELL  
MORE "ETHYL" CLEANER**

**It's car  
washing  
time—  
time for  
"ETHYL"\*  
Cleaner!**

**This new liquid cleaner  
CUTS CAR WASHING TIME!**

**HERE'S HOW:** 1. Use a combination of "ETHYL" Cleaner for a good wet wash. 2. Wash in oil. 3. Rinse it off. That's all. You have the whole car sparkling.

**IF YOU DON'T WASH YOUR OWN CAR—and your service station for a super wet wash with "ETHYL" Cleaner.**

**BUY THE CLEANER YOU BUY AT YOUR GAS STATION**

**For Better Only  
EASIER HOUSEWORK, TOO,  
WITH "ETHYL" CLEANER**

**Remember "ETHYL" Cleaner**—it's made with ammonia and pure glycerine—no harsh acids—no corrosives—no harmful vapors—no splashing—no hot to handle, too.

Clean up two ways in car washing time!

**Here's how:**

**Sell "Ethyl" Cleaner.** It's the quickest, finest car wash that ever came out of a bottle. (And 40% profit for you.) Write for your free "ETHYL" Cleaner signs. Cash in on these big full page ads; they're selling your customers "ETHYL" Cleaner.



**Sell car washing.** Sign your customers up for regular wash-rack service. (And use "ETHYL" Cleaner. Saves time. Saves work. More profit for each job done.) "ETHYL" Cleaner's advertising is selling your customers pride in a clean car.

**P.S.** Remind women to buy new "ETHYL" Cleaner—for dishes, glassware, pots and pans—enameled surfaces, refrigerators, stoves—woolens, rayons, nylons—rugs and upholstery—windows and mirrors. It's kind to hands, too.

## ANOTHER "ETHYL" PRODUCT

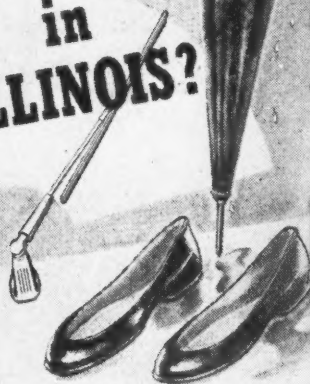
Ethyl Corporation

Distributed by Ethyl Specialties Corporation

405 Lexington Ave., New York 17, N.Y. \*REG. U.S. PAT. OFF.



**Is it  
raining  
tonight  
in  
ILLINOIS?**



If so, more than three million Trico shield Wiper Blades are ready so that motorists there can see safely. For 25 years, as original on tens of millions of motor world round, Trico complete wiper equipment has served. For authorized service, look for sign or consult the classified pages of your phone book.

**Trico Products Corporation**

**Is it  
raining  
tonight  
in  
California?**

more than four million Trico Wiper Blades are ready to clear vision to driver and passengers that they may see children of parent.

**Is it raining  
tonight in  
New York?**



more than four million Trico Wiper Blades make driving

**We're asking  
this question**

**18 MILLION TIMES EVERY MONTH**

**to increase your sales of replacement blades**

● Your customers...and motorists everywhere...are going to see these new blade-selling Trico ads many, many times during 1947.

Month after month, they are appearing in 18 million copies of LIFE, the SATURDAY EVENING POST, TIME, COUNTRY GENTLEMAN, and COLLIER'S.

Our aim is to make millions of car owners think of "TRICO" every time it rains...and to urge them to buy from you BEFORE it rains.

Ask your jobber for our newest counter and window displays and for the newest assortments of Trico Blades and Arms. With this new campaign in full swing, you'll sell more Trico replacements than ever before.



**Clear Driving Vision  
through Harnessed Air Power**

**Trico Products Corporation, Buffalo 3, N. Y.**

There is a Specially-Engineered  
**WORLD BESTOS**  
**BRAKE LINING**

For Every Type of Vehicle  
 For Every Kind of Service



**TRUCK GROUP BLOCKS**—These master segments are engineered for thousands of models of trucks dating from 1933.



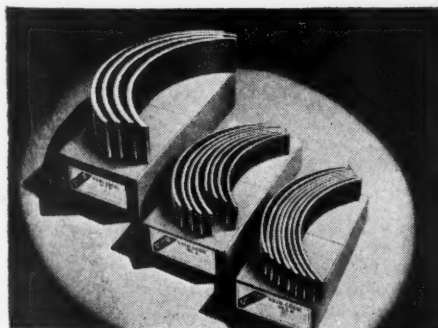
**DELUXE WOVEN**—A super-quality, dense, high friction lining for passenger cars, trucks and industrial applications.



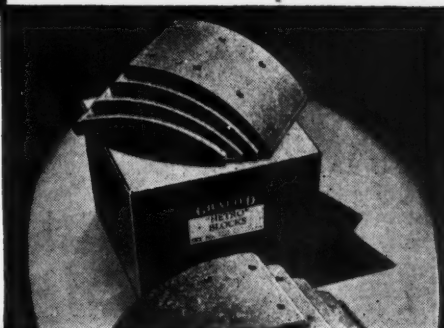
**PRESCRIBED FRICTION SETS** — "Prescribed" or "Engineered" for each type brake" to give correct braking, longer life.



**ROYAL GRID MOLDED (Rolls)** — A top quality molded lining designed especially for internal brakes. Quiet and long-lived.

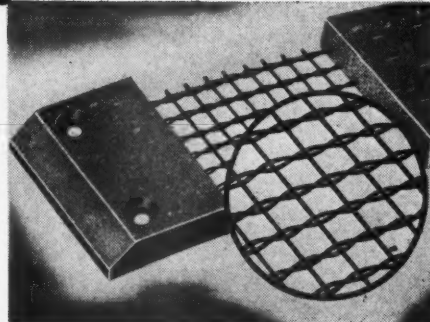


**HETRO BLOCKS** — Engineered in several formulas. Provide lowest cost per mile; highest safety factor.



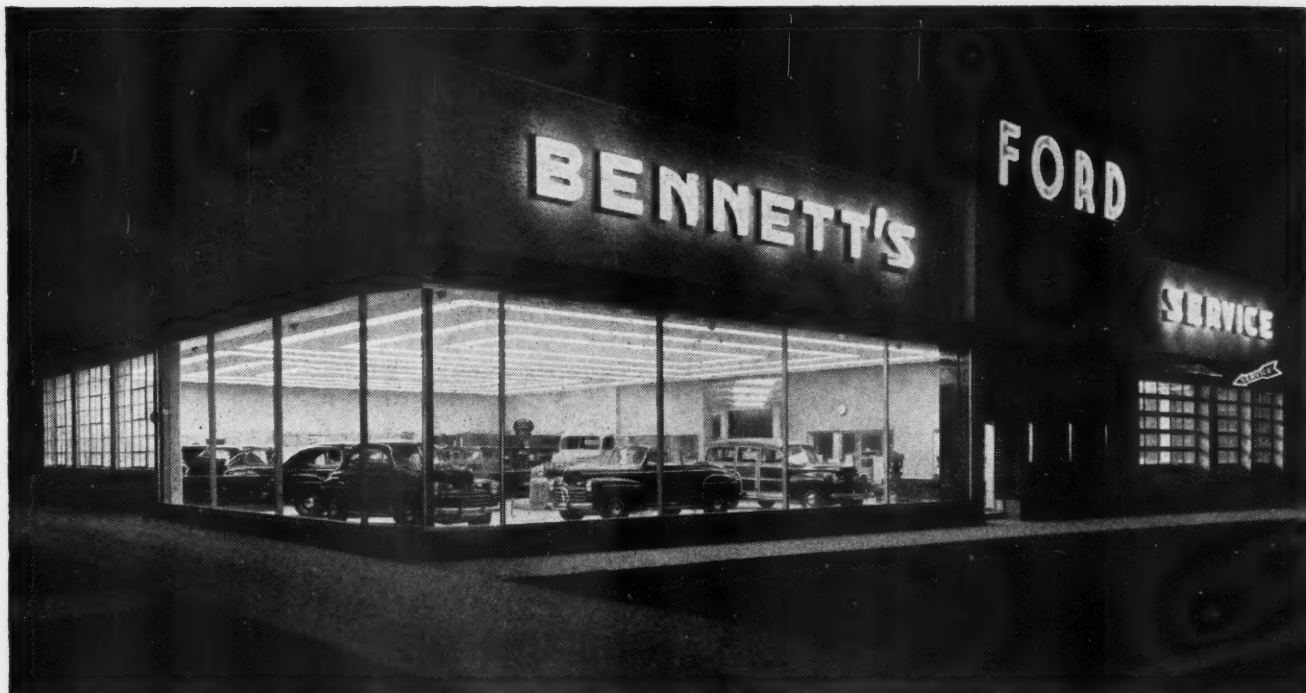
**GRID LOCK SETS** — Wire back sets for Ford, Chevrolet, Plymouth and the popular GM and Chrysler cars.

**MESHLOCK WIRE BACK REINFORCEMENT** prevents "spot bulge" when riveting lining to brake shoes — no more daylight between lining and shoe, spongy pedal action or tough adjustments.



**WORLD BESTOS**  
**CORP.**

**NEW CASTLE, INDIANA**



VISIBILITY OF THE ENTIRE SHOWROOM is made easy by large plate glass windows on front and side. The showroom is flooded with daylight—and at night exhibits the autos in a brilliantly-lighted, giant showcase.

# Glass

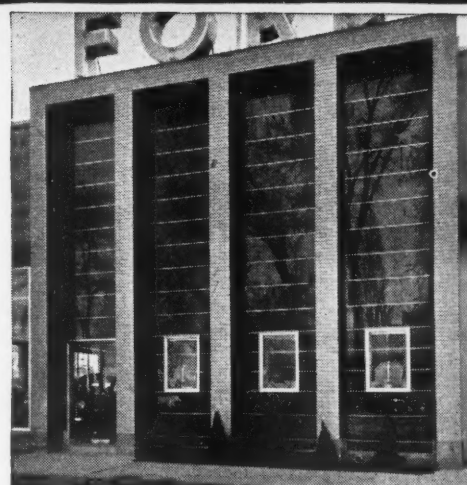
*joins the sales force*

Count on glass to put *more sell* in a dealer establishment—to set it apart from the ordinary.

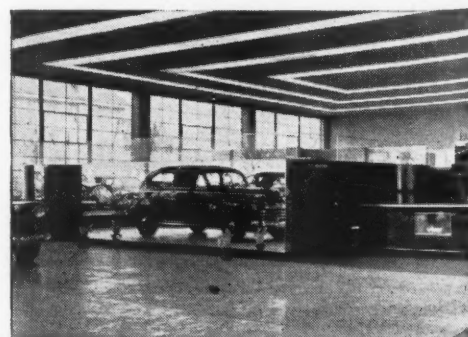
Beautiful, yes—and practical, too. This dealer showroom in Salt Lake City takes advantage of the many benefits of glass. Transparency for visibility and light transmission. A hard, gleaming, weatherproof surface that always looks new—that is easy to clean—and that doesn't need refinishing.

This automobile showroom is a typical Visual Front—designed to let people *see in*. Our colorful Visual Fronts folder includes many storefront ideas that you and your architect will find helpful. Write for it. Libbey-Owens-Ford Glass Company, 6967 Nicholas Building, Toledo 3, Ohio.

\* Reg. U. S. Pat. Off.



THE BEAUTY OF GLASS is an important element in building design. Here, lustrous black *Vitrolite*\* glass facing over the solid area "dresses up" the front. *Vitrolite* is available in a range of colors. They permit wide latitude in decorative effects. *Tuf-flex*\* tempered plate glass doors enhance the beauty of the front.



A FEELING OF SPACIOUSNESS is achieved in the showroom, and the display appears to be doubled by the use of plate glass mirrors on the end wall. In addition, *Vitrolite* is used here for attractive facing on the counter. Note the recessed ceiling lighting through panels of Reglex patterned glass.

Architect: Young and Hansen, Salt Lake City



**LIBBEY • OWENS • FORD**  
*a Great Name in* **GLASS**



*Make more profit on  
Repair Jobs with*

**HYPRESSURE JENNY**

**STEAM CLEANER**



Mechanics work with greater safety and so much easier on clean equipment that as much as 40% of their time, ordinarily wasted hand-wiping tools and machinery, is saved when the job is Hypressure Jenny Steam Cleaned *before* repairs. That *saved time* means 40% more shop capacity . . . less overhead . . . more profits. Hypressure Jenny Steam Cleaning is 10 times faster than hand cleaning . . . more thorough . . . and safer, too, because it eliminates the use of volatile cleaning fluids.

Besides shortening repair time, cleaning grease racks, pits, floors, walls, windows, skylights, etc., Hypressure Jenny brings you additional profits through the creation of new customer services such as motor and chassis cleaning . . . radiator cleaning and flushing . . . the removal of mud and dirt from the under sides of fenders, etc.

We'll be glad to send you complete information and the address of your nearest Hypressure Jenny dealer. Why not write today?

. . . is ready to clean quickly . . . thoroughly . . . economically from a cold start in less than 1 minute after pressing the starting switch. Hypressure Jenny cleans by a highly atomized mixture of steam, hot water and cleaning compound, applied under powerful pressure. Hypressure Jenny is sturdy . . . compact . . . portable . . . easily moved from job to job . . . and so safe and easy to use that ordinary labor can operate it.

**HYPRESSURE JENNY DIVISION**

**HOMESTEAD VALVE MANUFACTURING CO.**

**P. O. Box 95, Coraopolis, Pa.**

Mister, all your trouble was in the gas line!



**Authentic case history:** A customer brought in his 1939 Dodge complaining he had trouble on the way home from Washington. In Washington, carburetor and distributor had been replaced without correcting the trouble. In Baltimore, he stopped for more work—without results. When he limped into my shop, I immediately found the trouble was caused by a porous gas line. He spent \$40.00 he could have saved! A new line—list price 85¢—put an end to the trouble!

*Bill Alberti, Drexel Hill, Pa.*

**GAS AND OIL LINES CAUSE LOTS OF TROUBLE**

*but*

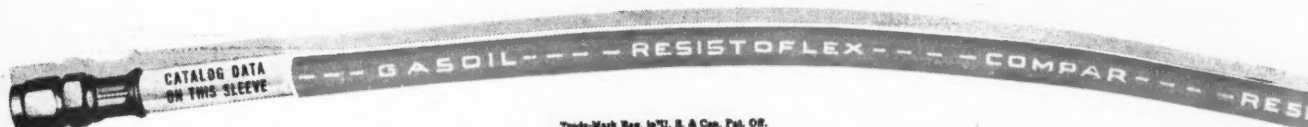
**RESISTOFLEX**

**gas-oil hose with COMPAR tube**

**We pay \$50.00 for case histories!** Tell us about *your* experience with faulty gas-oil hose. We will pay \$50.00 for each one used by us in a Resistoflex advertisement. The company will be the sole judge; and all entries become the property of Resistoflex Corporation.

**WILL NOT SWELL, ROT, CLOG, LEAK, BREAK OR COLLAPSE!**

- Totally unaffected by all types of gasoline, gasoline additives, Diesel fuel.
- Totally unaffected by all lubricating oils and crankcase additives.
- Totally unaffected by flexing and vibration.
- Original equipment on vehicles, vessels, aircraft, oil filters.



Trade-Mark Reg. in U. S. & Can. Pat. Off.

Resistoflex Corporation  
Belleville 9, New Jersey



PLANTS: Belleville, N. J.;  
Elkhart, Ind.; Toronto, Can.

**GAS-OIL HOSE • HOSE ASSEMBLIES • REUSABLE COUPLINGS • TUBE FITTINGS**

# "More Motorists Use More Simoniz than Any Similar Product!"



*"Simoniz is my year 'round best seller!"*

EVERY DAY, more and more dealers are finding out that SIMONIZ pays off at the profit line. Now that the "big push" is on for so-called seasonal sales, the year 'round national and local advertising for SIMONIZ wins the volume market. SIMONIZ is backed by more advertising than all other similar products combined. This, together with an age-old reputation supporting its claims, assures the first sale. And the results—  
"MORE MOTORISTS BUY MORE SIMONIZ THAN ANY SIMILAR PRODUCT!"

SIMONIZING offers a "double" profit for the service station or garage making it part of their complete service to car owners. If you're not already enjoying this guaranteed business-maker, write today for a FREE copy of the manual on operation and promotion of a Simoniz Service Station.



"When folks here in Berwyn ask me what's good for car finishes, I always tell them Simoniz and Simoniz Kleener. Most of the time, though, they know from experience that Simoniz is best. That's why, as long as I keep enough Simoniz on hand, I'm sure of steadily growing profits."

*John Grib*  
16th & Lombard Avenue  
Berwyn, Illinois



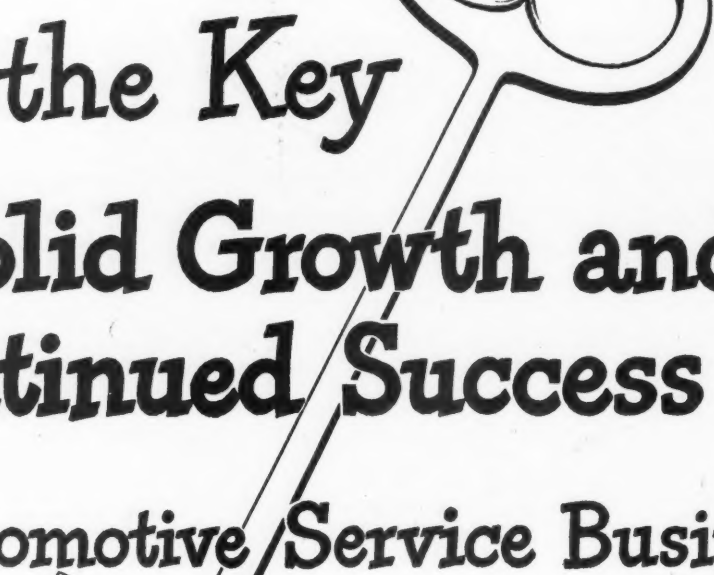
MOTORISTS WISE.  
**SIMONIZ**  
HOUSEWIVES DO LIKEWISE

THE SIMONIZ COMPANY, CHICAGO 16, ILLINOIS

"SIMONIZ"... Trade Mark,  
Reg. U. S. Pat. Off.



# Here's the Key to Solid Growth and Continued Success in the Automotive Service Business



**I**T'S BEEN proven time and again—outstanding lines are the key to a successful service business. Outstanding lines win acceptance, build confidence and attract new customers for you. And the *most outstanding* lines you can handle are United Motors lines!

## Lines That Win Customer Confidence\*

United Motors lines introduce you to America's greatest pre-sold parts and service market because they are all original equipment on leading cars in every price class. Your customers have more confidence in you when you use and feature the following United Motors lines: Delco-Remy Starting, Lighting and Ignition—Delco Batteries—Delco Hydraulic Brakes—Delco Radios—AC Fuel Pumps, Gauges and Speedometers—Delco Shock Absorbers—Guide Lamps—New Departure Ball Bearings—Klaxon Horns—Hyatt Roller Bearings—Harrison Radiators, Thermostats and Heaters—Inlite Brake Lining.

There's no need to take on all the United Motors lines at one time. Many of the thousands of successful United Motors dealers have started in a small way and added more lines as they prospered.

## Services That Build Your Business

Outstanding lines are not the *only* advantage you get with a United Motors franchise. It also helps you use them most effectively and sell them most profitably!

You are kept right up-to-date with the latest service information. You get individually planned sales and merchandising programs. You can count on having complete parts lines for all models. And consistent national advertising makes your United Motors sign a "star salesman" for you.

Start now to build more profit and more security into your business. Call your United Motors distributor for a helpful discussion of your situation—or write direct and we will arrange an interview for you.

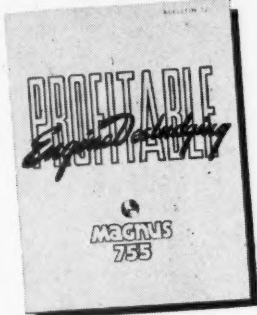
## UNITED MOTORS SERVICE

DIVISION OF GENERAL MOTORS CORPORATION  
GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN



## The Convincing Facts on Desludging Profits

Here's a booklet you'll find interesting and mighty useful. It tells you how desludging engines with Magnus 755 pays profits you'll find hard to match on any other work you do. It shows you how an engine is thoroughly desludged in 1 hour's time with 20 minutes of labor. It points out the profits from desludging along with a repair job—where the customer gets a "factory-clean" engine, and you are insured against a repair job going sour because of sludge-clogged lubricating passages.



The bulletin also explains why and how you should sell desludging jobs, even where no repairs are involved. Most cars that come into your shop have sludge accumulations. Most owners will listen to your story of the need for desludging at modest cost to prevent engine wear, breakdown and high repair costs.

Study the facts. See what one 55-gallon drum of Magnus 755 does to earn a net profit on desludging jobs of over \$370.00. Write for Bulletin 37 now!

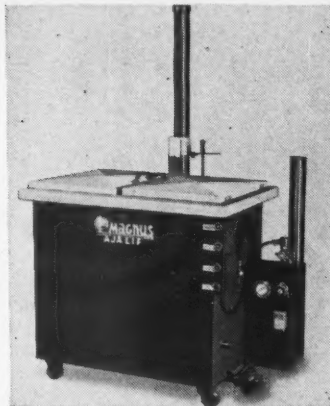
## New Motor-less, Gear-less Aja-Dip Cleaning Machine

The Magnus Aja-Lif Cleaning Machine shown herewith is the latest development in the Magnus line of cleaning equipment. It offers the same basic method of speeding cleaning by moving the work up and down IN the cleaning solution. It has no motor, no gears, belts, sprockets or complicated parts. It is entirely operated by compressed air!

In addition, the work, loaded on a sturdy, non-tilting platform, is automatically dipped in and raised out of the cleaning solution at the beginning and end of the cleaning cycle. Hands do not touch the solution.

Depending on the amount and pressure of air available, the Magnus Aja-Lif Cleaning Machine will handle up to 400 lbs. of work per load. Carrying area of the platform is 41" x 24".

If you have been looking for a simple, compact and efficient clean-



ing unit for your shop, here is the answer. No lubrication, no maintenance. Yet you get really fast, dynamic agitation (up to 180 vertical up and down strokes per minute) which insures high speed cleaning of both blocks and parts. More—you get total cleaning with elimination of hand work.

## No Hand Work on Carbonized Parts

Another outstanding job that Magnus 755 does is cleaning parts with carbonized oil deposits. Carburetors, pumps, rocker arms, pistons—all those elements you are accustomed to think of as demanding plenty of hand work, are readily cleaned in Magnus 755 without any manual operations.

This unique solvent emulsion cleaner works fast and well when you use it as a soaking solution. When you put it to work in a Magnus Aja-Dip Jr. Cleaning Machine on your carburetors, pumps, pistons, etc., you see what cleaning speed and quality really can be! There are some shops where the volume of parts to be cleaned warrants the use of a large Aja-Dip Machine, but the junior model is ideally adapted to the average shop.

## Eight Blocks Per Day—Four Man-Hours!

This #3 Magnus Aja-Dip Sr. Automatic Cleaning Machine is cleaning eight engines a day with only four man-hours of labor. Before installing this machine two years ago, the shop output was two engines a day, using kerosene and "elbow-grease."

The total cleaning cost per engine has been reduced by the use of the

## NEW CLEANING IDEAS

For Further Details Write Magnus

**Another Profit Maker** is Magnus D-Scale-R for curb cleaning of radiators. This inhibited acid cleaner is harmless to metals, but quickly and completely removes carbonates, scale and rust. Safe, sure and economical. No. 27

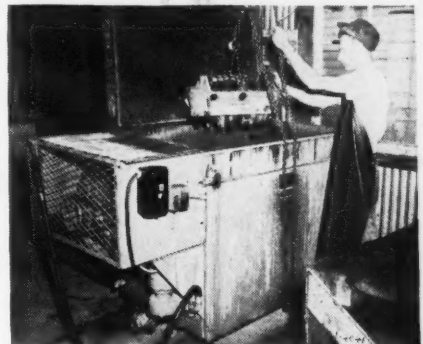
**Fastest, Lowest Cost Car Wash** is Magnus Carfoam. Just apply suds, making sure that all surfaces are rubbed over **once**. Rinse with water. That finishes the job. You get spotless bodies without streaking or filming at such a low material and labor cost that you are bound to make an attractive profit per job. No. 28

**When Bodies Are Very Greasy or Oily**, don't waste labor and materials trying to use ordinary cleaning materials. Magnusol is the answer. Use the same 1 to 8 mix of Magnusol to kerosene or safety solvent that you use for cleaning motors and chassis. Spray on. Let soak. Rinse with pressure water. You'll get clean, shiny, greaseless, streakless bodies every time. No. 29

**Want Clean, Odorless Restrooms?** That is one job Magnus 55-P does to perfection. Cleans, disinfects and deodorizes in one operation. Next to no rubbing or scrubbing is required. Fine for linoleum and tile floors, too, bringing back original color on long neglected surfaces. No. 30

**Is Your Cleaning Textbook Up-to-Date?** Have you written for the latest edition of the Magnus Automotive Cleaning Handbook? It's full of ideas on modern cleaning procedures that will insure much better cleaning at lowest possible costs. If you're looking for more profits, get your new edition now. No. 31

Aja-Dip Machine from \$5.00 to \$1.25, though labor costs are much higher today.



The management states that their engine rebuilding program has grown to such an extent, as a result of installing this Magnus Automatic Cleaning Machine, that they have had to increase their staff of mechanics from six to nine men to meet the demand.

Magnus Chemical Company, 174 South Ave., Garwood, N. J. In Canada—Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que.



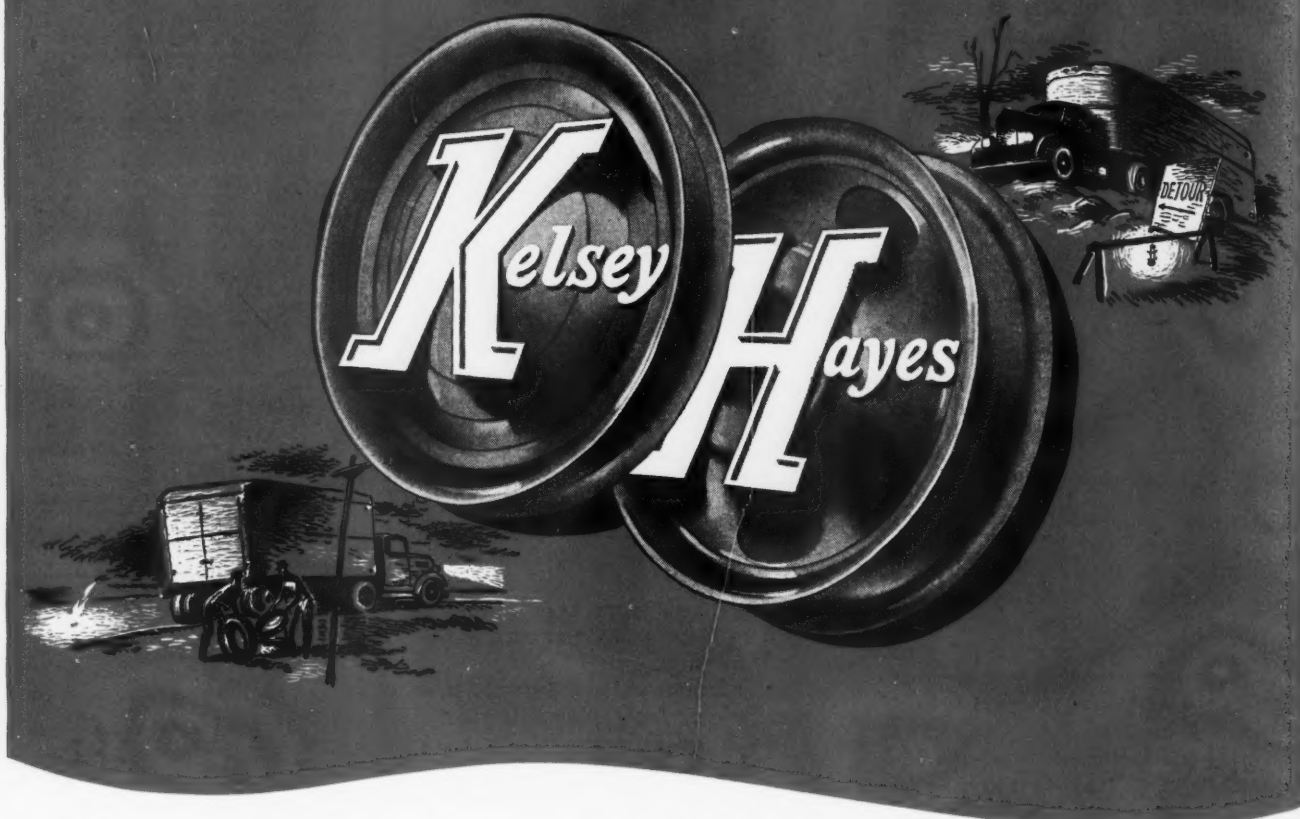
IN THE AUTOMOTIVE FIELD IT'S

# MAGNUS






CLEANERS • EQUIPMENT • METHODS

# NEW WIDE-BASE TRUCK WHEEL

## *Saves Time and Tires!*



### **KNOW-HOW CUTS COSTS MANY WAYS:** Saves tires 5 ways to increase mileage 20% to 50% . . .

-  Full width 5° tapered bead seats, under both tire beads, prevent rocking or pinching.
  -  Full 70% rim-to-tire ratio makes sidewalls stay straighter and stronger to prevent weakening by bulging.
  -  Treads make full, even road contact to improve stability and safety.
  -  Increases air volume under the load to stand shocks better.
  -  Reduces temperature of running tires as much as 60° below average.
- These and many other advantages for lowering operating costs as well as making installation easier, are worth your inquiry.

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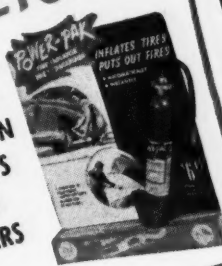


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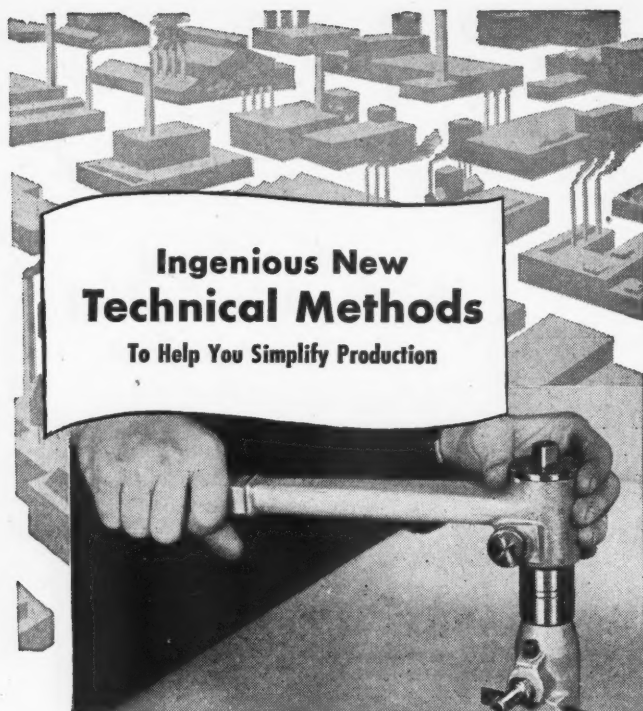
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JUNE, 1947

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## Ingenious New Technical Methods

To Help You Simplify Production

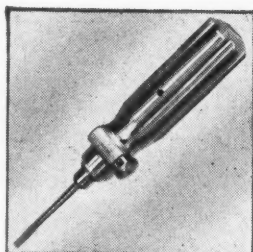
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AB-65



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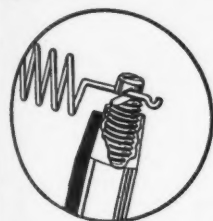
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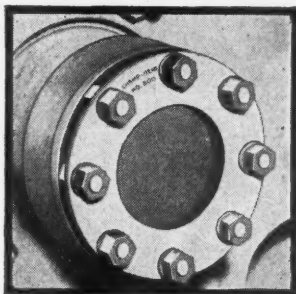


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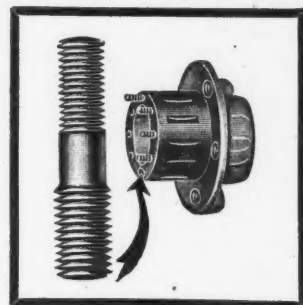
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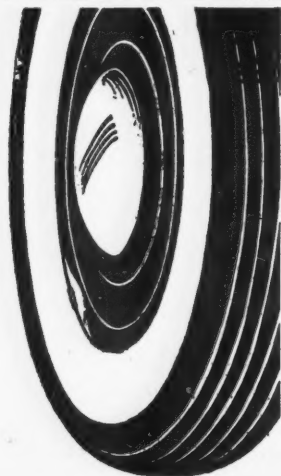
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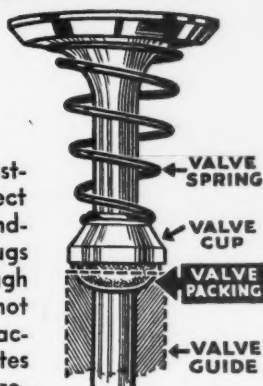
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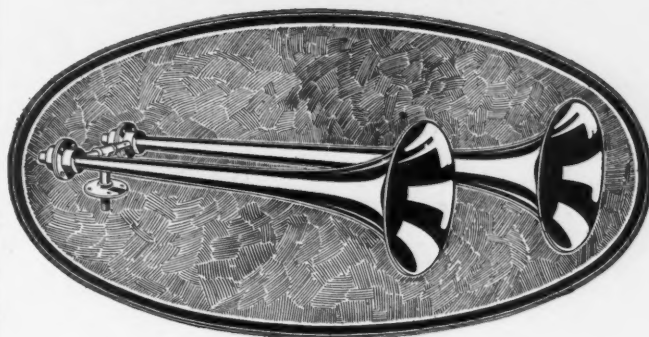
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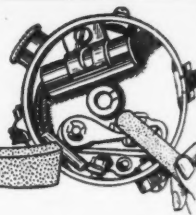
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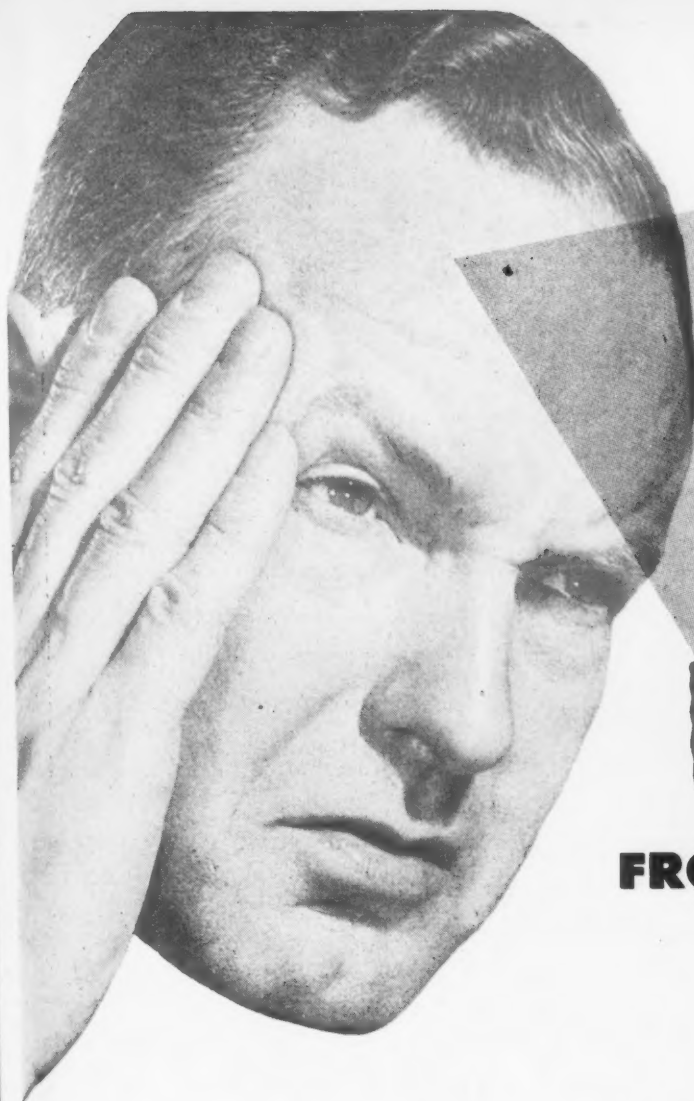


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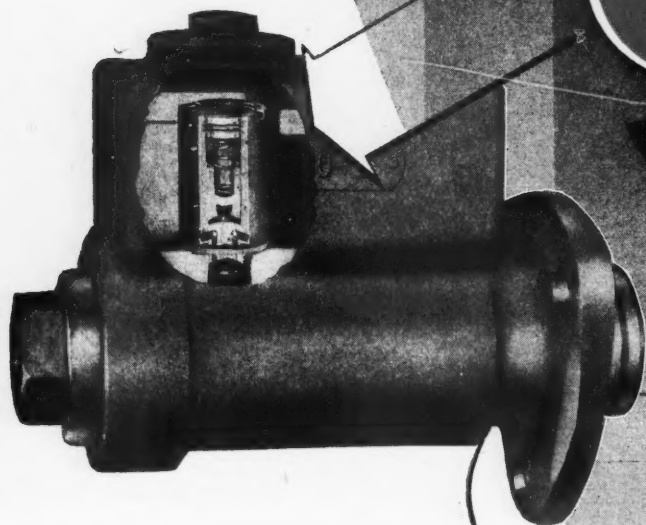
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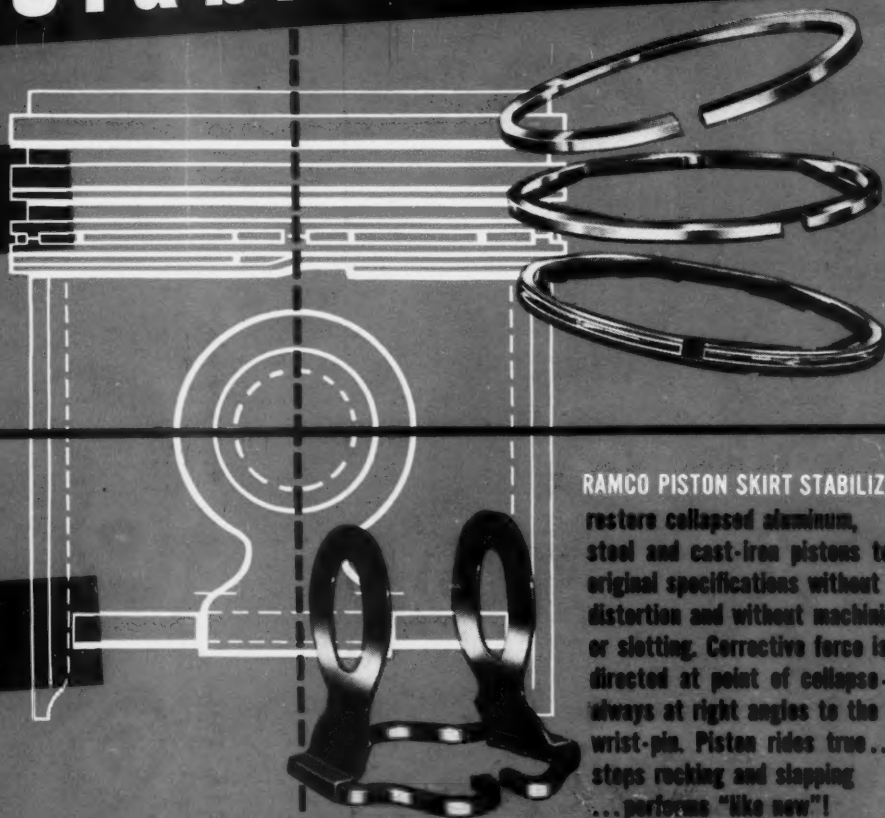
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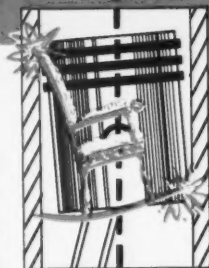
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